

PRIMARY EAR AND HEARING CARE

TRAINING MANUAL



World Health Organization

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PREFACE

The World Health Organization estimates that 1 in every 5 individuals – or about 1.5 billion people worldwide – currently live with a hearing loss. Of these, over 430 million require hearing rehabilitation services. The global prevalence of hearing loss continues to rise. It is projected that by 2050, 1 in 4 people will have hearing loss, and over 700 million will need hearing rehabilitation. Hearing loss affects people of all ages, with 34 million children being affected, and nearly 65% of adults aged above 60 years having hearing loss of varying severity.

Many of the common causes of ear diseases and hearing loss, for example ear infections or loud sounds and noise, can be prevented. Timely treatment and rehabilitation can benefit all people with ear diseases and hearing loss. Health workers, general practitioners, family doctors, and doctors working at primary level are often the first point of contact for people to receive health-care services. Many common ear and hearing problems can be diagnosed and managed by people in these professions. In addition, health workers can do a lot to support people with hearing loss and change the way the community perceives these problems by raising awareness. This manual is designed to help them do this.

About this manual

This manual is a practical guide on the prevention, identification, and management of hearing loss and common ear diseases that lead to hearing loss. It is intended mainly for health workers and doctors who work at primary care level and provide services to people either at health facilities or in communities. It is intended to be administered by a trainer/instructor familiar with ear and hearing problems, their assessment and management, and is accompanied by a trainer's handbook. The manual comprises a series of stand-alone modules which cover the following topics:

Module 1 Mechanism of hearing and anatomy of the ear
Module 2 Assessing ear and hearing problems
Module 3 The outer ear: diagnose, treat, refer
Module 4 Infections of the middle ear: diagnose, treat, refer
Module 5 Other problems of the middle ear: diagnose, treat, refer
Module 6 Hearing loss: grades, causes and prevention
Module 7 Identifying hearing loss in children and adults
Module 8 Rehabilitation of hearing loss
Module 9 Role of health workers and doctors in ear and hearing care
Module 10 What does the World Health Organization do?
Annexes Charts for recording and diagnosing ear and hearing issues

At the start of each module, there is a summary of the key learning points and technical terms used. The module also provides suggestions to the trainers regarding its use.

Technical words, when used for the first time, are explained at the start of the module and compiled in a glossary at the end of the manual. The modules introduce several Practical skills that aim to facilitate identification and management of ear and hearing problems at primary level. It also provides a set of Community resources. These resources can be translated into local languages and provided to people in the community as a means for prevention and management of ear and hearing conditions.

Accompanying online resources:

- Presentation slides on the theory in this manual/e-learning module
- Videos of practical skills
- hearWHO and hearWHOpro (available for free download)
- Community resources for raising awareness.
  - When to suspect hearing loss in an adult
  - When to suspect hearing loss in a child
  - Care of discharging ears
  - Hearing and language milestones in children
  - Tips for hearing aid users
  - Tips for healthy ears
  - Tips for safe listening

Development of the manual

The manual was developed following an evidence-based consultative process. The processes and diagnostic steps and management/referral processes described in the manual are based on various information sources. These include:

- WHO guidelines and technical products
- Published, high-quality clinical guidelines
- Systematic review and Cochrane reviews
- Textbooks on ENT and audiology
- Peer-reviewed publications
- Discussions with experts
- Stakeholder consultations
- Delphi surveys

Refer to the web annex for detailed information about the development of this training manual.

Using the primary ear and hearing care (PEHC) training resources

Programme coordinators for hearing care programmes or those responsible for training of primary level staff should first review the manual and all the modules. Ideally all modules should be included for the training of health workers. However, for flexibility, each module is available separately online and those that are most relevant can be selected.

It is suggested that training should include an additional module on the local context. This should focus on:

- prevalence of hearing loss in the region: country/area;
- most common ear problems encountered;
- availability of ear and hearing care services in the country/area;
- referral centres.

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This *Primary ear and hearing care training manual* is the outcome of a consultative process led by the World Health Organization (WHO). It was drafted by Shelly Chadha (WHO) and Mahmood Bhutta (Chair in ENT Surgery and Sustainable Healthcare, Brighton and Sussex Medical School, United Kingdom of Great Britain and Northern Ireland) under the guidance of Alarcos Cieza and Bente Mikkelsen.

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INTRODUCTION



DISCUSSION POINT 1

Have you ever met anyone with hearing loss? Was the person an adult or a child? What problems did the person face? How did you respond to the person? What did you think or feel?

Discuss with the group and your trainer.

What are hearing loss and deafness?

A person with hearing loss is unable to hear as well as someone with normal hearing. There are varying degrees of hearing loss which range from mild to profound (see Annex 1 for information on different grades of hearing loss). People with mild, moderate or moderately-severe hearing loss will have difficulty following conversations. People with severe or profound hearing loss in both ears are deaf and without the support of hearing technology, can hear nothing at all.



NOTE

The term **"deaf"** is used for people with severe or profound hearing loss in both ears as they can hear only very loud sounds or hear nothing at all.

The term **"hard of hearing"** is used for someone with mild to severe hearing loss, who cannot hear as well as a person with normal hearing.

Why do we need to hear?

Hearing is key for communication, particularly spoken language, which is essential to strong relationships and to our mental well-being. Hearing loss, when unaddressed, affects many aspects of life including language development, cognition, education, livelihood, and social engagements.

Babies who have severe hearing loss will find it difficult to communicate without rehabilitation. Children born deaf, or become deaf before they learn to speak, cannot develop speech or sign language without special training. If hearing loss is not identified and addressed in a timely manner, children who are hard of hearing are also likely to experience difficulties at home, in school, with friends and with their learning.

In addition, communication and language are essential for brain development. If children who are deaf, or whose hearing is impaired, do not receive timely intervention, their overall development is affected.

Adults, including older adults, with unaddressed hearing loss often find it difficult to communicate with friends, family, or people in general, either face-to-face or on the telephone, and can become lonely and depressed. If hearing loss is not addressed properly, people may face problems in finding or staying in employment.

NOTE

Unaddressed hearing loss in babies can lead to:

- problems in communication
- difficulty in, or absence of, speech development
- learning difficulties and poor academic performance
- difficulty in making friends.

Unaddressed hearing loss in children can affect their:

- speech
- performance in school
- overall development
- self-esteem.

Adults with hearing loss may:

- have difficulty in finding employment or keeping their jobs
- face stigma
- feel isolated
- become depressed.

Hearing loss can be addressed if identified early

DISCUSSION POINT 2

Do you know of some ways in which hearing loss is treated?

Discuss with the group and your trainer.

Early diagnosis of ear diseases and hearing loss is crucial. Almost every person who has ear disease or hearing loss would benefit from timely and appropriate actions:

Children with hearing loss or who are deaf can benefit from:

- use of hearing aids or cochlear implants;
- use of other technologies that can improve communication (e.g. loop system at school);
- rehabilitation, such as auditory and speech training;
- lip-reading and use of sign language;
- appropriate training of family members.

Adults who have hearing loss may benefit from:

- use of hearing aids and cochlear implants;
- use of other assistive devices;
- aural rehabilitation;
- lip-reading and use of sign language.

People with ear diseases can commonly be treated through:

- use of medicines;
- surgery;
- use of hearing aids or cochlear implants.

The main symptoms of ear disease are:

The different modules of this manual provide information and resources that can help you identify these problems at the earliest time within members of your community. It will also give information on how some common ear problems can be treated and when to refer people for expert advice.

Hearing loss and deafness be prevented

It is estimated that in children, 60% of hearing loss can be prevented. Many steps can be taken to help prevent hearing loss in both children and adults:

- Vaccination against rubella, measles, mumps, and meningitis.
- Ensuring that mothers and babies receive good care before, during and after the birth.
- Treating ear infections and other ear problems (e.g. wax).
- Protecting ears from loud sounds heard through headphones at work and in the environment.
- Ensuring safe listening to prevent hearing loss due to listening to loud music.
- Asking a doctor if the medicines prescribed can affect hearing, and checking how this can be avoided.
- Following healthy ear practices (refer to Module 9 for “Dos” and “Don’ts”).

Who diagnoses and manages ear and hearing problems?



DISCUSSION POINT 3

- Who manages ear and hearing problems in your community?

Discuss with the group and your trainer.

Many different people in medical professions can be involved in the diagnosis and treatment or rehabilitation of ear and hearing problems:

- **Audiologists** test hearing and may provide treatment or rehabilitation for ear problems, including the fitting of hearing aids or recommending the use of cochlear implants.
- **Otolaryngologists/ENT specialists** (doctors who specialize in the treatment of diseases of the ear, nose and throat (ENT).
- **Speech therapists and teachers of the deaf** who help with speech, language, and education for people who have hearing loss.
- **General practitioners, family doctors, or primary level doctors,** who can identify ear diseases and hearing loss and initiate treatment.
- **Primary health care workers,** at various levels, who are trained in the diagnosis and treatment of common ear diseases.

Ideally all professions would work together with the patient and their family to address the hearing loss or ear disease.

Module 1

MECHANISM OF HEARING AND ANATOMY OF THE EAR

Module 1

MECHANISM OF HEARING AND ANATOMY OF THE EAR

PRE-TEST

Module 1: Mechanism of hearing and anatomy of the ear

Questions	True	False	Don't know
The pinna is made up of cartilage covered by skin and can bend			
The tragus makes wax to fill up the ear canal			
The normal ear canal is a straight tube with a wet lining like the lining inside your mouth			
The eardrum is at the end of the ear canal			
The ossicles conduct sound vibrations from the eardrum to the cochlea (hearing organ)			
The Eustachian tube connects the middle ear space to the back of the nose			
The middle ear space is full of mucus to help us hear properly			
The cochlea (hearing organ) contains hair cells to convert sound vibrations into nerve signals			
The balance organ is called the vestibular system			
Infection in the ear can cause a lame face (facial palsy)			
Score			

LEARNING OBJECTIVES

By the end of this module, trainees should be able to:

- Recognize and name parts of the ear.
- Understand the structure of the ear.
- Explain the functions of different parts of the ear.
- Explain the path through which sound travels in the ear.
- Explain how people hear.

TERMINOLOGY

- Audiologist
- Auditory nerve (hearing and balance nerves)
- Cochlea (hearing organ)
- Ear canal
- Ear drum (tympanic membrane)
- Facial nerve
- Hair cells (sensory cells)
- Hard of hearing
- Inner ear
- Middle ear
- Middle-ear space
- Ossicles (bones) – malleus, incus, stapes
- Outer ear
- Pinna
- Sound vibrations
- Tragus
- Wax



DISCUSSION POINT 1.1

- List some of the sounds that you like and don't like. Share these with the class.
- Why do you like or don't like these sounds?
- How do you think these sounds are heard? What makes you like them or not like them?

Discuss with the group and your trainer.

1.1 Parts of the ear

The ear consists of three parts (Figure 1.1):

- **Outer ear:** pinna and ear canal
- **Middle ear:** ear drum and bones of hearing (ossicles)
- **Inner ear:** cochlea (hearing) and vestibular system (balance)

The ear consists of three parts:

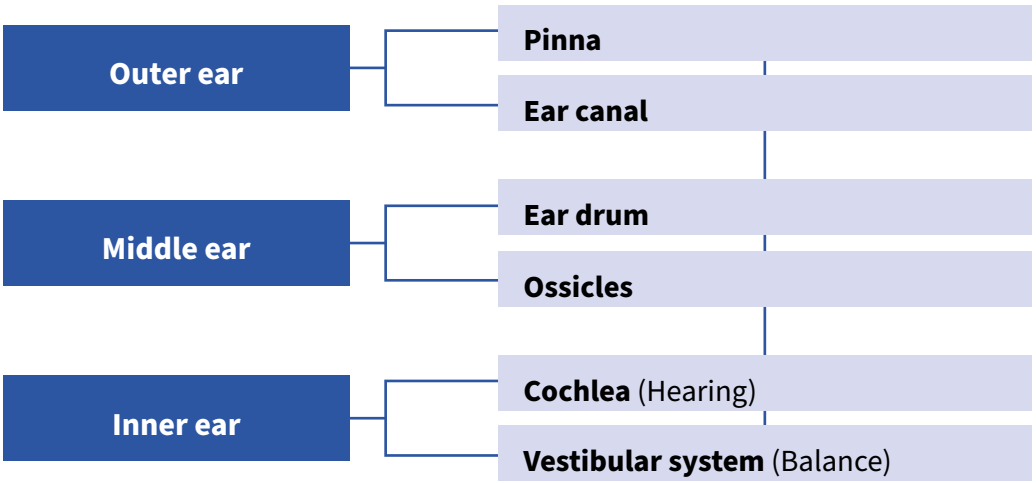


Figure 1.1 The three parts of the ear

1.2 Structure and function of the outer ear

Structure of the outer ear

The **pinna** and the **ear canal** together make up the outer ear (Figures 1.2a and 1.2b).

The pinna consists of cartilage covered with skin. The front part of the pinna is called the **tragus**. The pinna collects sound and sends it into the ear canal.

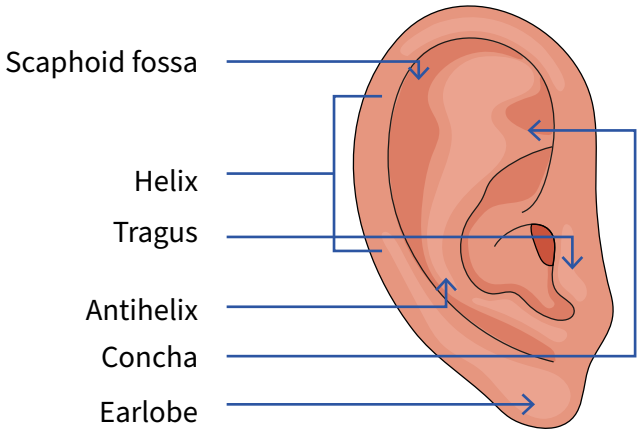
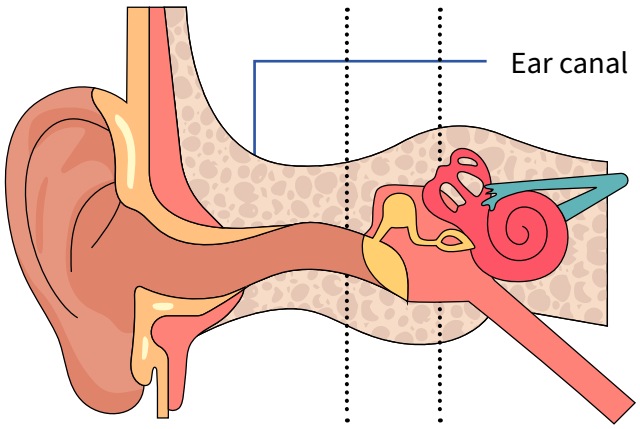


Figure 1.2a Parts of pinna



The pinna and the ear canal

Figure 1.2b Ear canal

ACTIVITY 1.1 Examining the outer ear

Choose a partner from your group. Take it in turns to examine each other's ears. As you do so, mark your response to each question in the form below.

	Right ear		Left ear	
	Yes	**No**	**Yes**	**No**
Can you see the pinna?				
Can you see the tragus?				
Can you see the entrance to the ear canal?				
Is it open?				
Can you see any hairs in the entrance to the ear canal?				
Do both ears look normal?				

The **ear canal** is a tube of skin that leads to the **ear drum (tympanic membrane).** In the outer part of the ear canal, the skin has hair and underneath the skin there is cartilage. Deeper in the ear canal the skin is thin, has no hair, and is stuck to bone. This deeper skin can be painful if it is touched.

The ear canal makes yellow or brown coloured wax. Wax is made by the ear canal to clean the ear of dirt and normally is expelled from the canal by the ear itself.

Function of the outer ear

The sound vibrations picked up by the pinna travel down the ear canal to the ear drum causing the ear drum to vibrate.



DISCUSSION POINT 1.2

What will happen if the ear canal is blocked, for example, by wax?

Discuss with the group and your trainer.

1.3 Structure and function of the middle ear

Structure of the middle ear

The ear canal leads to the ear drum (also known as the tympanic membrane). The ear drum is a thin membrane that separates the outer ear from the middle ear. The middle ear is a space deep behind the ear drum. It is normally full of air. There are three tiny bones in the middle ear called the ossicles (Figure 1.3a). The names of these bones are the malleus, incus, and stapes.

It is possible to view the middle ear by looking through to the ear drum with an otoscope (Figure 1.3b).

NOTE

Sound vibrations can only be conducted across the middle ear if the space is filled with air.

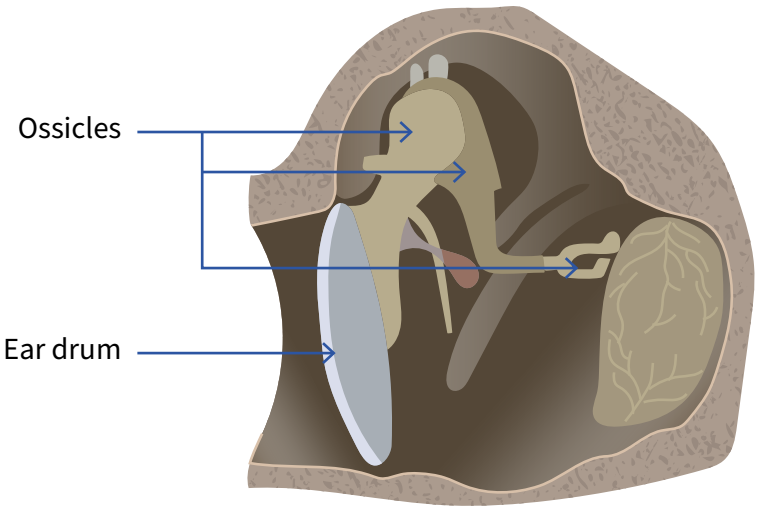


Figure 1.3a The ear drum (tympanic membrane) and bones of hearing (ossicles) in the middle ear

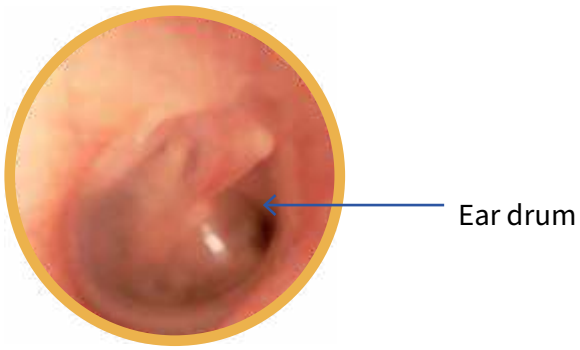


Figure 1.3b A normal right ear drum (tympanic membrane) on otoscopy

The middle ear is connected to the back of the nose by a tube called the eustachian tube (Figure 1.4), which helps to maintain the pressure in the middle ear. When the tube becomes blocked, for example when a person has a cold, it can cause a feeling of blockage and even pain in the ear.

The middle ear is also connected to the mastoid bone (Figure 1.5), which is the bone behind the pinna. Ear infections can spread into the mastoid bone.

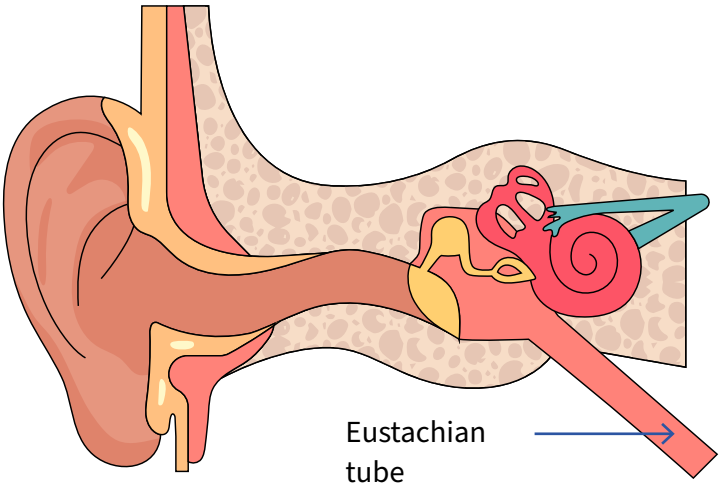


Figure 1.4 Eustachian tube



Figure 1.5 Mastoid area

ACTIVITY 1.2 Discussion

In groups of three or four, discuss the following points:

- What does the ear drum do?
- What can damage the ear drum?

Discuss your answers with your group and with your trainer.

Function of the middle ear

Sounds in the ear canal vibrate the ear drum; the movements travel through the three ossicles to the cochlea in the inner ear causing the fluid in the inner ear to vibrate.

DISCUSSION POINT 1.3

- What do you think would happen if the ossicles could not vibrate?
- What might cause the ossicles to not vibrate?

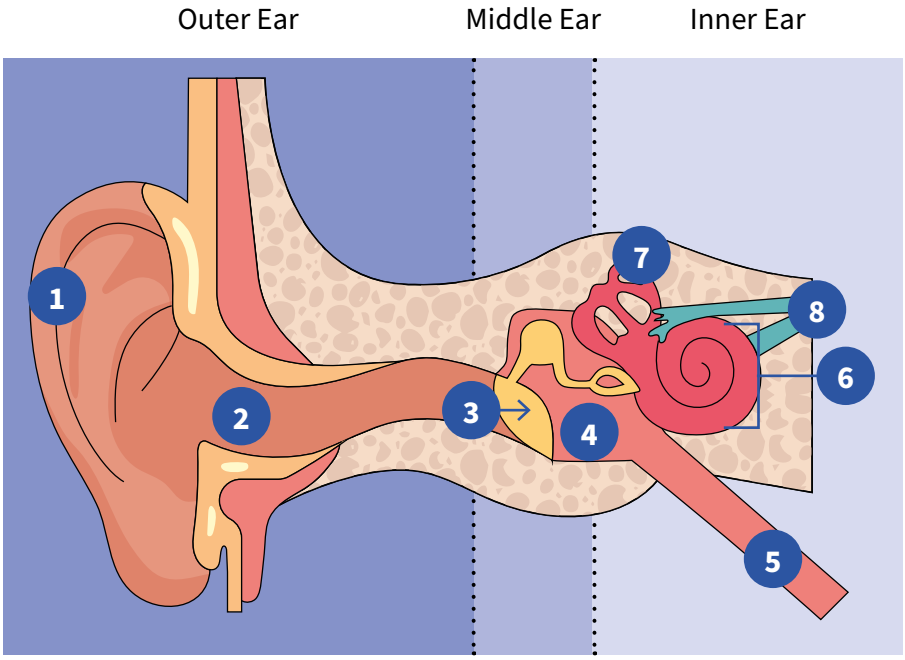
Discuss with the group and your trainer.

1.4 Structure and function of the inner ear

Structure of the inner ear

The inner ear is made up of two parts, the cochlea and the vestibular system (Figure 1.6).

1. The **cochlea** deals with sound vibrations and is responsible for hearing.
2. The **vestibular system** is responsible for balance.



Key

1. Pinna
2. External auditory canal
3. Tympanic membrane (Ear drum)
4. Tympanic cavity
5. Eustachian tube
6. Cochlea
7. Vestibular system
8. Hearing (auditory) nerve

Figure 1.6 The parts of the inner ear

The cochlea is filled with fluid and contains a delicate membrane lined with tiny hair cells. The hair cells are all connected to the hearing nerve. The vestibular system is also filled with fluid and helps us to maintain our balance. Problems in the vestibular system can cause us to feel dizzy.

Function of the inner ear (cochlea)

Vibrations of the ossicles cause the fluid to vibrate. These vibrations are picked up by the hair cells which change the sound vibrations into tiny nerve signals. These nerve signals then travel along the auditory nerve to the brain.



Left facial palsy

1.5 Facial nerve

Each side of the face has a Facial nerve which makes all the muscles on that side of the face work. The Facial nerve passes through the ear and, with some ear conditions, can become affected. For example, infection in the middle ear can, at times, cause facial palsy (also called lame face).

1.6 How do we hear?

Our ears help us to hear. Ears collect sound vibrations and change them into electrical signals that are sent to the brain. When these signals reach the brain, we hear sound. To have good hearing, all parts of the ear must be functioning properly (Figure 1.7). Ears also help us to maintain balance.

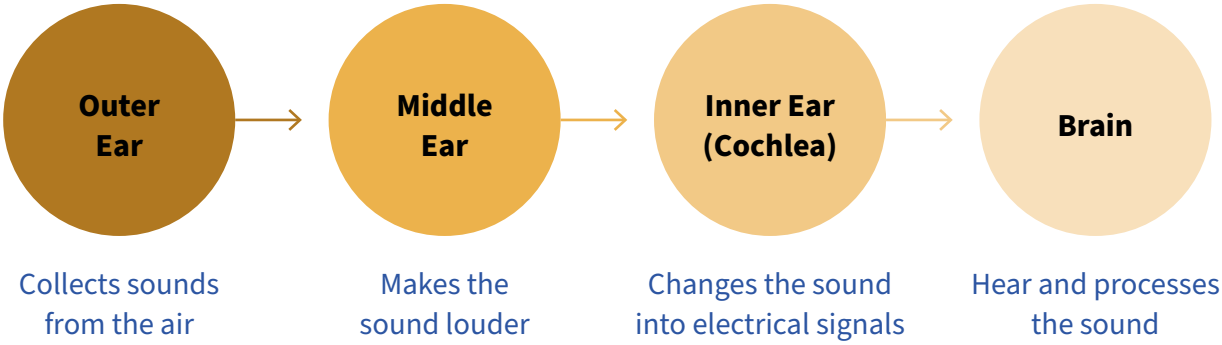


Figure 1.7 How we hear

Outer ear	collects sounds from the air
Middle ear	makes the sounds louder
Inner ear (cochlea)	changes the sounds into electrical signals
Brain	hears and processes the sounds

POST-TEST

Module 1: Mechanism of hearing and anatomy of the ear

Questions	True	False	Don't know
The pinna is made up of cartilage covered by skin and can bend			
The tragus makes wax to fill up the ear canal			
The normal ear canal is a straight tube with a wet lining like the lining inside your mouth			
The eardrum is at the end of the ear canal			
The ossicles conduct sound vibrations from the eardrum to the cochlea (hearing organ)			
The Eustachian tube connects the middle ear space to the back of the nose			
The middle ear space is full of mucus to help us hear properly			
The cochlea (hearing organ) contains hair cells to convert sound vibrations into nerve signals			
The balance organ is called the vestibular system			
Infection in the ear can cause a lame face (facial palsy)			
Score			

Module 2

ASSESSING EAR AND HEARING PROBLEMS

Module 2

ASSESSING EAR AND HEARING PROBLEMS

PRE-TEST

Module 2: Assessing ear and hearing problems

Questions	True	False	Don't know
Pain in the ear can be due to an acute infection of the external or middle ear			
Child not doing well at school can be due to hearing loss			
Impacted ear wax can cause heaviness but not pain in the ear			
Chronic ear infection can cause dull pain or heaviness in the ear			
You cannot examine the eardrum without an otoscope			
Foul smelling ear discharge can indicate a serious type of ear infection			
Otoscope is an instrument used to test for hearing loss			
You should not attempt to clean the ear discharge as this can be painful			
If a patient's ear canal gets slightly injured while examining, you should immediately refer to a specialist			
Home remedies like pouring hot oil in the ear can be harmful and should never be used			
Score			

LEARNING OBJECTIVES

By the end of this module, trainees should be able to recognize:

- Common ear complaints and what they could mean.
- How to take a history in cases of ear or hearing problems.
- How to examine the ear with use of an otoscope and what to expect when this is done.

PRACTICAL SKILLS COVERED

PRACTICAL A: Taking a patient's history
PRACTICAL B: Examination of the ear

WHAT YOU WILL REQUIRE

- Pen and paper
- Otoscope with speculum
- **Community resource 1a:** When to suspect hearing loss in an adult (printed copies)
- **Community resource 1b:** When to suspect hearing loss in a child (printed copies)

TERMINOLOGY

- Bulb
- Batteries
- Dizziness
- Ear drum perforation
- Ear hygiene
- Glue ear
- History
- Itchiness
- Main symptoms of ear disease – hearing loss, otorrhea, otalgia
- Otalgia
- Otorrhea
- Otoscope
- Refer
- Speculum
- Tinnitus



DISCUSSION POINT 2.1

- Have you ever had any problems in your ear?
- Share with the group what the problem was.
- How was it diagnosed and managed?

Hearing assessment is an important part of a complete ear and hearing check-up (as explained in Module 7). There are three steps to assessing ear and hearing problems:

1. Take a history with respect to the ear and hearing symptoms
2. Examine the ears
3. Test the hearing (refer to Module 7).



The three steps in assessing ear and hearing problems: take history, examine ears, test hearing

2.1 What are the most common symptoms of ear and hearing problems?

Patients often complain of problems relating to their ears and hearing. The most common symptoms that you could encounter in the community are:

Pain in the ear (otalgia)

This may be acute pain and can be due to:

- Acute infection in ear canal (acute otitis externa): pain may be accompanied by ear discharge and at times, fever.
- Acute infection of the middle ear (acute otitis media): pain is commonly accompanied by fever and at times ear discharge.
- Ear wax: hard, impacted wax can, in some cases, lead to severe pain in the ear.
- Foreign body: children may insert an object into their ear which can injure the ear canal or ear drum causing acute pain.
- Injury over the ear, such as slapping.

Patients may sometimes complain of long-standing, dull pain or heaviness in the ear. This can be due to:

- Chronic infection in the ear canal.
- Glue ear, where fluid is present inside the middle ear.

NOTE

If the result of the ear examination is normal, other possible areas where referred pain may originate must be examined. This will require referral to a specialist.

Sometimes pain is experienced in the ear when in reality it originates in the jaw, teeth, neck, or throat. Examining the ear should allow you to establish if the ear pain is caused by ear disease or if there is some other source.

Ear discharge (otorrhea)

Ear discharge, or otorrhea, is pus or liquid coming from the ear. This is commonly due to infection in the outer or middle ear. The discharge may be white, yellow, green or brown. Sometimes there may be blood in the discharge. At times it may have a bad smell, which can indicate a serious type of infection (cholesteatoma).

DISCUSSION POINT 2.2

- Have you ever had or known anyone who has had discharge from the ear?
- What was the discharge like? Do you know what caused it?
- What do you think was the cause?

Discuss with the group and your trainer.

NOTE

The ear should always be clean of discharge before examination and giving medicines to the patient (refer to Practical D).

Hearing loss

Hearing loss presents in different forms in different age groups. Adults themselves will sometimes notice that they have hearing loss. However, if the loss is gradual they may not become aware of it, and it may be friends or relatives who notice that a person is not hearing well or is speaking louder than usual.

Hearing loss may present as social isolation. In not being able to follow conversations, a person may start avoiding situations such as family or social gatherings.

Children are generally brought to see a doctor or medical practitioner by their parents with the complaint that their child is not hearing well, or has poor or delayed speech development when compared to children of the same age. This delay could be due to hearing loss.

With older children, parents may say that their child is not doing well at school or is not paying attention. These can be signs of hearing loss, and in such cases it is important to check the child's hearing.

Information on when to suspect hearing loss can be found in **Community resource 1a and 1b**. This resource can be shared with people in the community.

Other symptoms of ear problems

Other signs and symptoms of ear problems include:

- Hearing sounds in the ear, such as a buzzing, whistling or ringing, without any such sound being present externally. This is called "tinnitus". Tinnitus can be caused by a problem in any part of the hearing mechanisms and is often the first symptom of noise damage to the ear. Occasionally, the symptom may be sufficiently distressing and persistent to affect the person's hearing and quality of life.
- Dizziness which can cause a person to feel unsteady or feel that they could fall. Dizziness can be a symptom of ear disease although it can also be caused by problems in other parts of the body.
- Itching in the ear which is a common complaint and may be due to dryness in the ear or wax accumulation. Severe itching may be caused by fungal infection or skin diseases affecting the ear canal. The ear should be examined.

The main symptoms of ear disease are:

- Hearing loss
- Discharge from the ear
- Pain in the ear

Now look at Practical A which gives details on how to take a patient's history of ear and hearing problems

PRACTICAL A: Taking a patient's history

Introduction:

Taking a history is the first step in diagnosing ear and hearing problems. This practical provides guidance on what questions to ask and how to ask them.

Equipment:

- Pen and paper



Taking a history of ear and hearing problems

Procedure:

1. Introduce yourself to the patient and ask their name and age. Ask them if they are studying or working and, if working, what job they do.

2. Ask what the problem is with the ear. It could be hearing loss, discharge from the ear, pain in the ear, or something else.

3. You will need to record details of each symptom mentioned, and whether one or both ears are affected.

4. If there is a complaint of hearing loss, ask:
   - How long has it been there?
   - When was it first noticed?
   - Is there also a persistent ringing or buzzing sensation in the ear (tinnitus)?
   - Is there any history of hearing loud noise for a long time (such as working in a factory)?
   - Is there any history of hospitalization or prolonged drug therapy?

5. If there is discharge from the ear, ask:
   - When did the discharge start?
   - How often does it occur? (Is it just this once, or every few months, every few weeks, every day?)
   - What does it look like? Clear liquid? Yellow pus?
   - Is there blood in the discharge?
   - Does the discharge have a bad smell?

6. If there is pain in the ear, ask:
   - How long has the pain been there?
   - Is it always there or only sometimes?
   - How severe is it?
   - Is the pain only in the ear, or also in the jaw, neck, or mouth?

7. Ask about other symptoms, such as dizziness, sound in the ear (tinnitus), or itching in the ear.

8. Record the history on a piece of paper. To record both the history and the examination, you may wish to use the sheet provided in Annex 2. For details relating to the examination, see Practical B.



NOTE

It is important to make sure that you ask the person if they have put any foreign objects in their ear, or used any home remedies, such as hot oil.

ACTIVITY 2.1: Taking a patient's history (to follow Practical A)

- Select a partner.
- In this activity, one partner takes the role of the patient while the other acts as the health worker who takes the patient's history. The roles are then reversed.
- The trainer provides a sample history sheet giving details of the ear and hearing problems.
- The partner taking the role of patient, will familiarize themselves with the problems described in the history sheet.
- The partner, acting as health worker, will then ask about the ear and hearing problems, with the "patient" responding on the basis of the problems set out in the history sheet.
- The roles are then reversed.

In the role play, it is important to take a detailed history of the patient to understand the problems fully (as in a real life situation), as described in Practical A. The sample history sheet provided in Annex 2 can be used.

2.2 Examining for signs of ear disease

Once the patient's history has been taken, then examine both ears.

- First, remember to wash your hands before the examination.
- Examine the pinna.
- Using an otoscope, then look into the ear canal and at the ear drum. Examining the ear in this way is called otoscopy (described in Practical B). Otoscopy helps to diagnose problems in the ear canal, middle ear and ear drum.
- Make sure to always examine both ears, even if the person's complaint is in one ear only. It is always a good idea to look at the "normal" ear first.

2.3 Identifying hearing loss in children and adults

After examining both ears, the person's hearing must be checked. There are different ways of doing this depending on the person's age. Detailed instructions on how to test for hearing are given in Module 7.

PRACTICAL B: Examination of the ear

Introduction:

Examination of the ear includes looking at the ear canal and the ear drum.

You will need an otoscope. An otoscope shines a light into the ear canal and has magnification to enlarge the image. There are many kinds of otoscopes. Some otoscopes can connect to a computer or mobile phone and record pictures or videos of what is being viewed.

Equipment:

1. An otoscope (Figure 2.1)
2. Speculum of different sizes

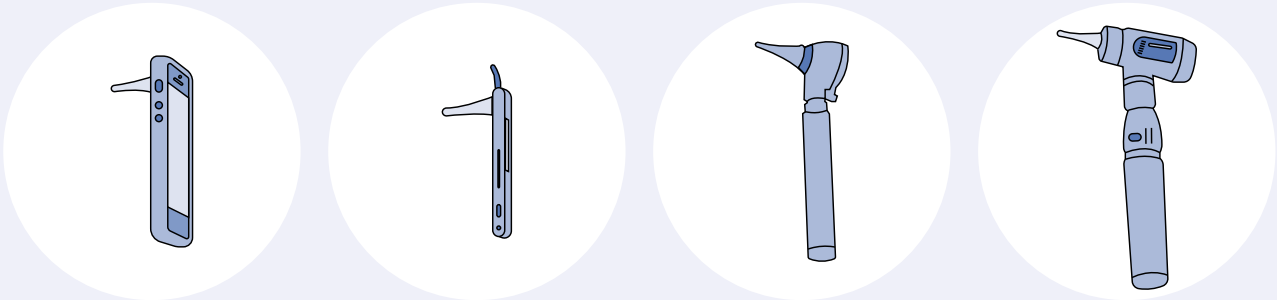


Figure 2.1 Different types of otoscopes

An otoscope needs a speculum. This is an attachment to the otoscope for looking into the ear canal and is usually made of plastic. Make sure that you use a clean speculum for each patient.

Procedure:

1. First wash your hands.
2. Ask the patient if you may examine their ears, and if they have any pain.
3. Make sure the patient is seated and that you are at the same height as the patient.
4. Examine the pinna and the area around the pinna. Make sure you also examine behind the pinna to look for any swelling, redness or pain. Look for scars from ear operations. The most common areas for these scars are behind the pinna or just in front of it.
5. Before starting otoscopy, push the tragus and observe if the patient has any pain. Be watchful for any wincing or indication of pain when you touch the ear or insert the otoscope. Also, look for any evident discharge. If there is discharge, this will need to be mopped up before otoscopy (see Practical E).
6. Make sure the otoscope light is working. (If it is not, the battery may need to be replaced or recharged, or the bulb replaced.)
7. Place the speculum onto the otoscope. If you have different sizes of speculum, the largest one that fits into the patient's ear canal should be used. Clean the speculum with cotton wool and disinfectant before starting the examination.
8. Hold the otoscope in your right hand if you are examining the patient's right ear, and your left hand if you are examining the patient's left ear. Hold the otoscope as you would hold a pen (see Figure 2.2b).
9. The ear canal has a natural curve and is not straight. It points upwards and forwards, towards the eye. Using the hand that is not holding the otoscope, pull the pinna upwards and backwards to straighten the ear canal (Figure 2.2a). In a young child pull the pinna straight back (not upwards). Keep the pinna held during otoscopy (Figure 2.2b).

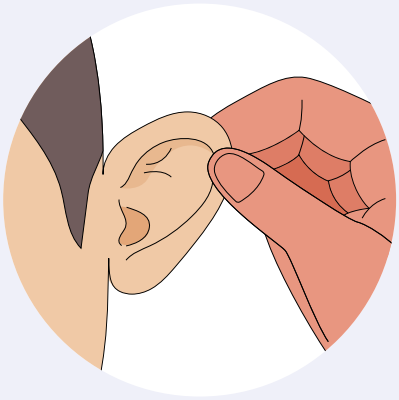


Figure 2.2a Straightening the canal

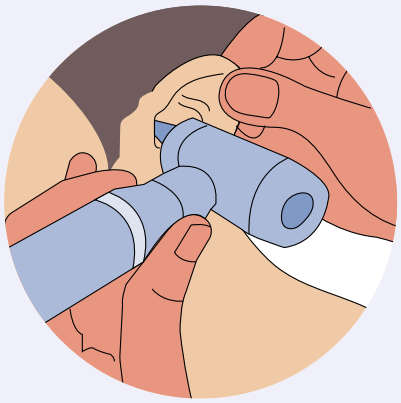


Figure 2.2b Inserting the otoscope

10. Insert the otoscope and speculum gently, directing it upwards and forwards (towards the eye) so that you can see the ear drum. Do not insert the speculum too deeply into the ear canal; ideally you should not need to insert more than half the length of the speculum. Putting one finger on the patient's cheek bone can help to keep the otoscope steady (Figure 2.2b).

    Touching the skin of the deep ear canal (the skin with no hairs) may hurt the patient. If the patient experiences pain, stop. Pain can be caused by not directing the speculum correctly or by inserting it too deeply. It can also be caused by infection of the outer ear.

11. Examine the ear canal for discharge, swelling, wax, foreign bodies or other problems (see Module 3 on the outer ear).

12. Look at the ear drum. If you cannot see the ear drum it may be because there is wax or pus blocking the view of it, or because the otoscope is not positioned correctly. Gently adjust the position of the otoscope, making sure that it is directed forwards and upwards (towards the eye).

13. If there is a lot of wax or pus, you may need to perform an ear washout or dry mopping (see Practical C and Practical E).

14. When you can see the ear drum, identify the structures. Is the ear drum normal? Is it red? Is there a hole in it (a perforation)? Is it pulled in? Is there a cholesteatoma? (See Modules 4 and 5 on problems of the middle ear.)

15. Use the findings of your examination, and the patient's history, for your diagnosis. Annex 3 can assist.

16. Clean the speculum with cotton wool and disinfectant after completing the examination.



Normal ear drum



Small perforation in ear drum



Large perforation in ear drum



Holding a child for ear examination

NOTE

- In young children it may be best to seat the child on a knee of the accompanying adult. Ask the person to hold the child's legs between their legs and to hold the child's hands with one of their hands. Then ask the person to hold one side of the child's head against their chest, keeping the ear clear for you to perform the otoscopy (Figure 2.3). The child can then be turned around for the other ear to be examined.
- It is possible sometimes to accidentally damage the skin of the ear canal during otoscopy. If this occurs, it will be painful for the patient and may cause bleeding at the time. In most cases, such an injury will heal by itself.
- Sometimes you may not be sure what you are looking at or you may be unable to examine. In that case, especially if the person is complaining of an ear or hearing problem, you should **refer** to a doctor. (If required, the doctor may **refer** the person to a specialist.)

When no otoscope is available, how can the ear be examined?

In situations where there is no otoscope available, do not give up trying to examine the ear canal and ear drum. With some practice and skill, a torch light can be used to look into the ear. The procedure is as follows:

- First, wash your hands.
- Ask permission from the patient.
- Use one hand to gently pull the pinna backwards and upwards (or backwards only in case of young children) to straighten the ear canal.
- With the other hand, gently pull the tragus forwards with finger to open the ear canal.
- You can ask an assistant to shine a light into the ear canal.
- This will help you to see into the ear canal and look for:
  - Ear wax
  - Swelling and redness
  - Ear discharge
  - Foreign body in the ear canal.



How to examine the ear without an otoscope

ACTIVITY 2.2: Examining the ear (to be performed after Practical B)

- For this activity, the instructor will form the trainees into groups, with each group having one otoscope for examination.
- Trainees will examine the different parts of the ear of each other, focusing on one part of the ear at a time. The corresponding section of the Patient record (as given below and included in Annex 2) will be completed by the trainee performing the examination:
    1. Pinna
    2. Tragus
    3. Mastoid
    4. Ear canal
    5. Ear drum

- The examination must first be performed without the otoscope and then with the otoscope.
- Complete the examination form below. Either one or both ears can be examined, and the findings described in the Patient record below.

	Left Ear	Right Ear
Pinna	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:
	Is there any pain on pressing the tragus: ☐ Yes ☐ No	Is there any pain on pressing the tragus: ☐ Yes ☐ No
Ear canal	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:
Ear drum	Describe what you saw. How does the ear drum look to you?	Describe what you saw. How does the ear drum look to you?
	Do you think this is normal or abnormal?	Do you think this is normal or abnormal?
Mastoid	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:	☐ Normal or ☐ Abnormal If abnormal, describe what you saw:

POST-TEST

Module 2: Assessing ear and hearing problems

Questions	True	False	Don't know
Pain in the ear can be due to an acute infection of the external or middle ear			
Child not doing well at school can be due to hearing loss			
Impacted ear wax can cause heaviness but not pain in the ear			
Chronic ear infection can cause dull pain or heaviness in the ear			
You cannot examine the eardrum without an otoscope			
Foul smelling ear discharge can indicate a serious type of ear infection			
Otoscope is an instrument used to test for hearing loss			
You should not attempt to clean the ear discharge as this can be painful			
If a patient's ear canal gets slightly injured while examining, you should immediately refer to a specialist			
Home remedies like pouring hot oil in the ear can be harmful and should never be used			
Score			

Module 3

THE OUTER EAR: DIAGNOSE, TREAT, REFER

Module 3

THE OUTER EAR: DIAGNOSE, TREAT, REFER

PRE-TEST

Module 3: The outer ear: diagnose, treat, refer

Questions	True	False	Don't know
Some people have a tiny "hole" in front of their pinna which can become infected			
The pinna is examined with the use of an otoscope			
Pain due to infection of ear canal in increased on touching the tragus			
People should routinely clean their ear canals with q-tips or cotton buds to keep them clean			
Wax does not come out of the ear canal by itself and always must be removed			
Foreign bodies in the ear canal need to be removed			
To remove wax by an ear washout, use clean boiling hot water			
Otitis externa is treated with antibiotics			
Sometimes a person may get a bitter taste in mouth after putting in ear drops			
You should always test the hearing when a patient has a deformed ear			
Score			

LEARNING OBJECTIVES

In this module trainees will learn about:

- Common diseases of the outer ear including the pinna and ear canal.
- How to remove ear discharge and foreign bodies from the ear by washout.
- Actions that can be taken to treat these problems in the community.
- Treatment which may need to be given by specialists for the conditions.
- When to refer patients with outer ear problems to a doctor/specialist.

PRACTICAL SKILLS COVERED

PRACTICAL C: Washout of the ear
PRACTICAL D: Dry mopping
PRACTICAL E: Instilling eardrops

WHAT YOU WILL REQUIRE

- Otoscope with speculum
- Clean water (boiled if necessary)
- 20 ml syringe (without needle)
- Kidney dish or other bowl
- Tissues
- Ear drops
- Patients with some of the common ear problems (for demonstration)
- Cotton and wooden stick applicator

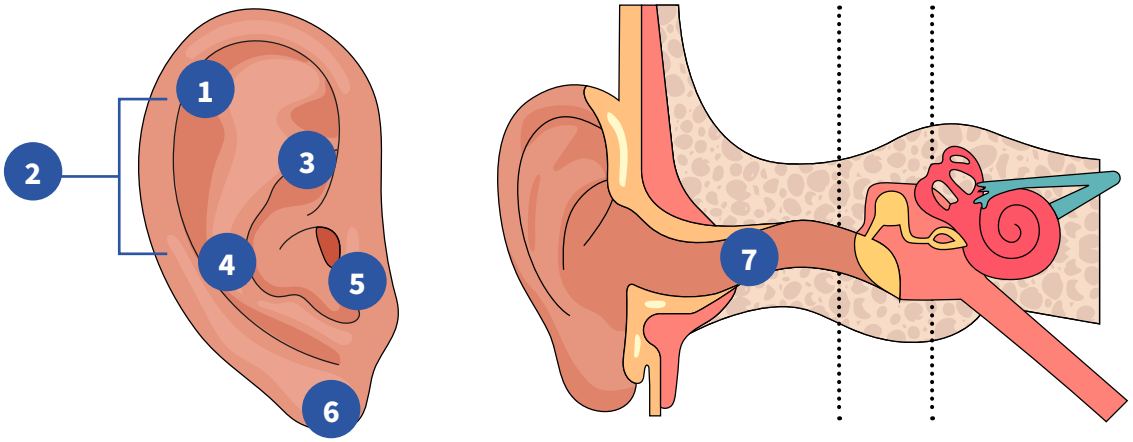
TERMINOLOGY

- Care of ears
- Cartilage
- Deformities of the pinna
- Foreign body in ear canal
- Fungus otitis externa
- Hematoma of the pinna
- Infection of the pinna
- Injury of the pinna
- Otitis externa
- Pre-auricular sinus
- Swelling of pinna
- Tragus
- Treatment with eardrops
- Washout of the ear
- Wax

3.1 Structure and function of the outer ear

You can revise the structure and function of the ear by referring back to Module 1.

ACTIVITY 3.1 Label the parts of the external ear



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

DISCUSSION POINT 3.1

- Where does ear wax come from? What is its purpose?
- What happens if ear wax accumulates in the ear canal?

Discuss with the group and your trainer.

3.2 What can you see when you examine the outer ear?

When you examine the pinna and the ear canal, you may find it to be normal or recognize some abnormalities. Table 3.1 below describes the sort of problems you can find when you examine the pinna or the ear canal:



Normal ear canal

Table 3.1 The outer ear: what do you see?

	What do you see?	What does this indicate?
Pinna	Look at the front and back of the pinna – no abnormality is seen.	Normal pinna
	• There could be a boil or a sore on the skin. • The pinna could be swollen. • There could be a tiny "hole" in front of the pinna which could be infected. • The pinna could be injured. • The pinna could be deformed or absent. • There could be some other problem.	Problem of the pinna (see Table 3.2 below)
Ear canal	No abnormalities seen when examining the ear canal with an otoscope. The ear drum can be seen.	Normal ear canal
	• The ear canal could be absent. • The ear canal could be blocked by wax. • There could be a foreign body in the ear canal. • The ear canal could be filled with discharge. • The skin lining of the ear canal could be infected. • There could be a fungal infection. • There could be some other problem.	Problem in the ear canal (see Table 3.3 below)

3.3 Problems of the pinna

When you examine the pinna, you may see certain abnormalities.

Problems of the pinna: findings and management

Superficial skin infections – sores

- Treat by cleaning the sores and applying an antiseptic cream. Some patients may need treatment with antibiotics.
- Treat with cleaning and appropriate medicines. Ask the patient to return for a check-up.

Patients with chronic conditions should be REFERRED.

Swelling of the pinna can be due to infection or haematoma

A haematoma is collection of blood under the skin. It needs to be drained as soon as possible. Infection is usually accompanied by pain, redness of the area, and tenderness (pain on touching). An infection can be serious and patients with infection should be referred urgently to a hospital.

If you are unsure, REFER the patient.

If it is likely that the patient will not be able to see a doctor immediately, then start treatment with antibiotics[1].





Pinna haematoma which may require drainage and antibiotics: **refer**.

Injury to the pinna

If the injury is minor (e.g. a cut in the skin), treat it with appropriate cleaning and dressings. Ask the patient to return for a daily check-up until the injury has healed.

NOTE

In cases of serious injuries that cut fully through the cartilage or into the ear canal, or with severe burns, **refer** the patient to a hospital for treatment.

[1] Regulations regarding the recommendation of prescription medicines varies across countries. Health workers should ensure compliance with national and local regulations and practices.

Pre-auricular sinus (tiny "hole" in front of the pinna)

If this is not infected then no treatment is needed. Infection of the sinus can lead to pain, swelling, tenderness and discharge.
If it is infected:

- start antibiotic treatment and **refer** to a doctor
- ask patient to return for a daily check-up.





Preauricular sinus: In the picture on the right the sinus is swollen and infected

NOTE

A pre-auricular sinus may need surgery if it becomes infected. **Refer** to a doctor/ENT specialist when the infection has healed or if the infection will not heal.

Deformities (abnormal shape) of the pinna

At times the pinna may be malformed, or it may be very small in size and in some cases may be absent. The malformation may or may not be accompanied by hearing loss.

- Check for hearing loss and **refer**.





Abnormal shape of pinna (microtia)

ACTIVITY 3.1 Examining the pinna

What can you see when you examine the pinna?
Choose a partner and look at both ears of your partner and examine the pinna.
Mark off each findings on the examination chart below.

Examination of the pinna	Left ear		Right ear	
Is there any infection of the skin around the ear or in the pinna?	Yes	No	Yes	No
Is the pinna swollen or red?	Yes	No	Yes	No
Is there any injury to the pinna?	Yes	No	Yes	No
Is there a tiny “hole” in front of the pinna?	Yes	No	Yes	No
Is this hole infected?	Yes	No	Yes	No
Is the pinna deformed?	Yes	No	Yes	No
Is there an abscess on the pinna?	Yes	No	Yes	No
Is there anything else abnormal that you cannot identify?	Yes	No	Yes	No
Is the pinna normal?	Yes	No	Yes	No
Is the pinna absent?	Yes	No	Yes	No

Discuss with your trainer what you have seen and any difficulties that you may have experienced.

3.4 Problems of the ear canal

DISCUSSION POINT 3.2

Have you ever tried to look into a person's ear canal? What do you think you would see there?

Discuss with the group and your trainer.

The ear canal can be examined with an otoscope (see Practical B). If an otoscope is not available, you can also examine using a torch (see Module 2). Remember to always check both ears (even if the complaint relates only to one ear). Common conditions and their clinical findings and treatment are described in Table 3.3 below.

Table 3.3 Common problems of the ear canal and their management

	The problem	Treatment and referral
Foreign body	You may see a foreign body such as beads, pencil tips, sticks, insects, seeds or others Common complaint: • something has been deliberately or accidentally inserted in the ear • pain in the ear. Sometimes, there may be no complaint.	Most foreign bodies can be removed by doing an ear washout (see Practical C). However, caution is required for certain objects: *Seeds*: these can swell in the ear if an ear washout is given. The patient should be referred to a specialist for removal as soon as possible. *Insects*: sometimes these may not be removed with an ear washout. In such cases, a health worker should first drown the insect by filling the ear canal with clean oil, then follow with an ear washout. **NOTE** • If the foreign body cannot be safely removed, **refer** to a doctor. • Do NOT use hooks or other sharp instruments to attempt removal.

<table>
<tr>
<td>Wax</td>
<td>Common complaints with wax collected in the ear canal:
• pain in the ear
• heaviness in the ear
• difficulty in hearing
At times, there may be no complaint.

NOTE
It is normal to see small amount of wax lying in the ear canal. This does not require any treatment unless it is blocking the ear canal.</td>
<td>Wax is a normal secretion of the ear canal. Wax does NOT need to be removed if not blocking the ear canal.
If wax is blocking the ear canal, it can be removed by doing an ear washout.
In cases where the wax is hard, it should be softened by using wax softeners prior to its removal. Wax softeners can be used for 2–3 days prior to the ear washout.

NOTE
If the wax cannot be safely removed, refer to a doctor.</td>
</tr>
<tr>
<td>Otitis externa (infection of the ear canal)</td>
<td>Common complaints:
• Acute pain in the ear
• Pain commonly aggravated by touching the tragus
• Itching in the ear (common in fungal infection)
• Discharge from ear
• At times, fever.</td>
<td>Clean discharge from ear canal by dry mopping it gently and/or a gentle ear washout.
Treat with appropriate ear drops. Teach patient how to use these (see Practical E).
Patients may also need treatment with antibiotics. Check with a doctor/ENT specialist if you are unsure.
Patients should be examined every 2 days and if the ear canal has filled with pus, it must be cleaned again.

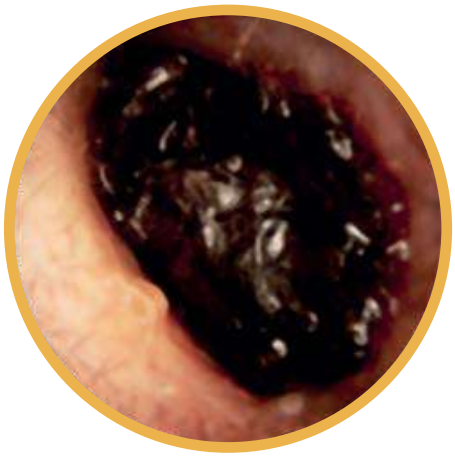
Refer if:
• you are unsure about how to manage the patient.
• the condition does not respond to treatment.
• the swelling and redness have spread to the area around the ear.</td>
</tr>
<tr>
<td></td>
<td>Some other problem but you do not know what it is.</td>
<td>Refer these patients.</td>
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</table>



A bead in the ear canal



An insect in the ear canal



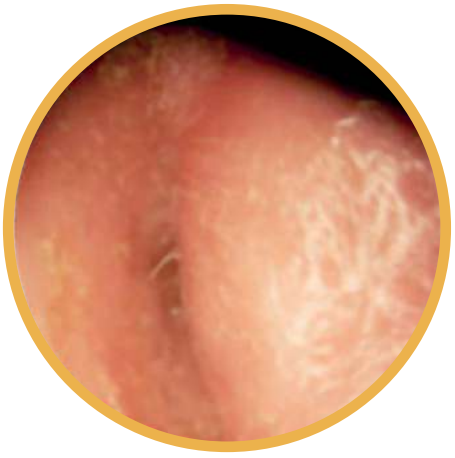
Wax in the ear canal



Fungal otitis externa (white wet-cotton-like mass in the ear canal)



Otitis externa: red swollen skin of ear canal



Otitis externa: red swollen skin of ear canal

ACTIVITY 3.2 Examine the ear canal (refer to Practical B)

Choose a partner. Use an otoscope to examine both ear canals of your partner. Then try examining without an otoscope (using torch light) as described in Module 2. Respond to the questions set out in the table below.

Examination of the ear canal	**Left ear**		**Right ear**	
Is there any wax in the ear canal?	Yes	No	Yes	No
Is the wax blocking up the ear canal?	Yes	No	Yes	No
Is there a foreign body in the ear canal?	Yes	No	Yes	No
Is there any discharge in the ear canal?	Yes	No	Yes	No
Is the skin lining of the ear canal inflamed and/or swollen?	Yes	No	Yes	No
Is there anything else abnormal that you cannot identify?	Yes	No	Yes	No
Is the ear canal normal?	Yes	No	Yes	No

Discuss with your trainer what you have seen and any difficulties that you may have experienced.

PRACTICAL C: Washout of the ear

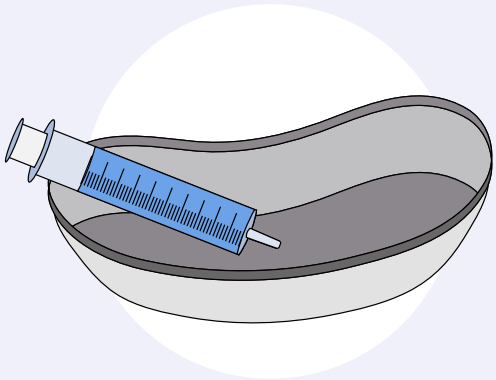
Introduction:

Washout of the ear can be used to clear wax or a foreign body from the ear canal. It can also clear pus from the ear.

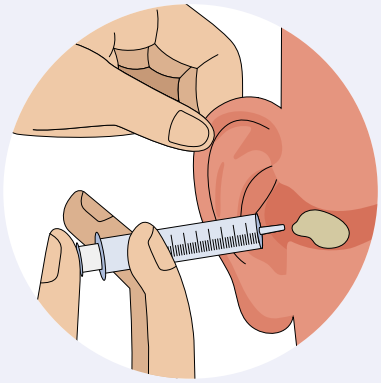
Equipment:

- Clean water (boiled and cooled to body temperature (37 °C)
- 20 ml syringe (without needle)
- Kidney dish or other bowl
- Tissues

  Optional:
- Iodine solution (e.g. 10% povidone-iodine) mixed with water



Syringe filled with water and a kidney bowl



Syringe placed in ear canal

Procedure:

1. Wash your hands and ask permission.
2. First examine the ear (Practical B).
3. Make the irrigation solution. Water should be slightly warmed to make sure it is neither too cold nor too warm. The ideal temperature is 37 °C, i.e. the same as body temperature.
4. Fill the syringe with water. If using iodine, draw up 1 ml of povidone-iodine with 19 ml of water.
5. Place the tip of the syringe into the ear canal. Point the syringe so that it is facing towards the top of the ear canal, and slightly backwards.
6. Ask the patient to hold the kidney dish or other bowl under the ear and tight against the skin of the neck.
7. Push the irrigation solution into the ear canal. The solution will drain into the bowl, and may contain wax, a foreign body or pus.
8. Repeat washout until there is only clear solution coming out of the ear, and no wax or pus.
9. Examine the ear again with an otoscope. Repeat washout if needed.
10. Use dry mopping (Practical D, Module 4) to dry the ear canal.

NOTE

Avoid ear washout if the patient:

- complains of ear pain
- has had recent surgery in the ear
- has a dry hole in the ear drum
- has been diagnosed with acute otitis.

ADDITIONAL NOTES:

- Iodine-based antiseptics can be used. Alcohol-based antiseptics (such as chlorhexidine) should NOT be used in the ear as these can damage the inner ear.
- If the patient has pain during ear washout, stop the procedure.
- Use a fresh syringe and solution for each patient.
- The ear MUST be dried properly after an ear washout.

PRACTICAL D: Dry mopping

Introduction:

Dry mopping is used to clear pus out of the ear canal. It can also be used to dry the ear after washout (see practical C, module 3). Dry mopping can be performed with either:

a. Tissue wick (Method A); or
b. Cotton mop (Method B)

Either Method A or Method B can be used. Using a tissue wick is easier and less likely to injure the ear canal. This is the preferred method. If tissue paper is not available, the cotton mop can be used.

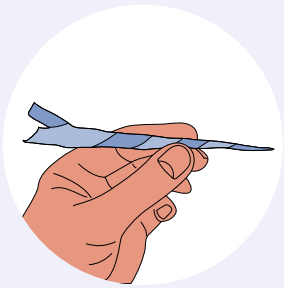
NOTE

DO NOT MOP the canal when there is acute pain in the ear. If dry mopping causes fresh bleeding or severe pain, STOP the procedure.

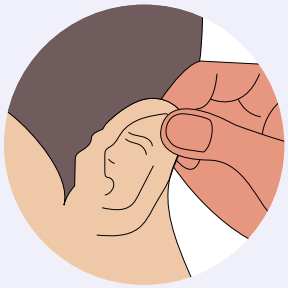
METHOD A: Using a tissue wick

Equipment:

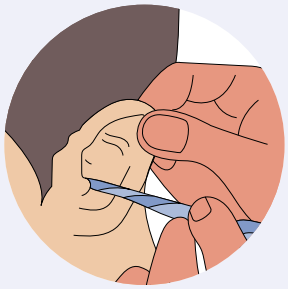
- Tissues
- Otoscope
- Speculum



Tissue wick



Gently pull the pinna back



Inserting the tissue wick



Leave the tissue wick in place for around 10 seconds

Procedure:

1. Wash your hands.
2. Ask permission of the patient.
3. Examine the ear (see Practical B, Module 2) to diagnose the underlying ear problem.
4. Twist the end of a tissue to make a “tissue wick”.
5. Pull the pinna back. Insert the tissue wick 2–3 centimeters into the ear canal.
6. Leave the tissue wick in place for around 10 seconds.
7. Pull out the wick and see if it has pus or other fluid on it.
8. Throw away the wick you have just used.
9. Repeat with another tissue wick. Continue repeating until the tissue wick is no longer wet when withdrawn.
10. Repeat otoscopy to confirm that all pus or other fluid has been removed.

METHOD B: Dry mopping

Equipment:

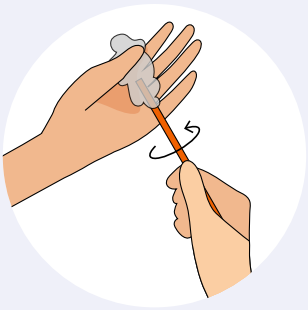
- Cotton
- Wooden stick applicator
- Otoscope
- Speculum



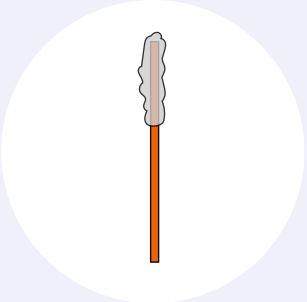
Wash your hands



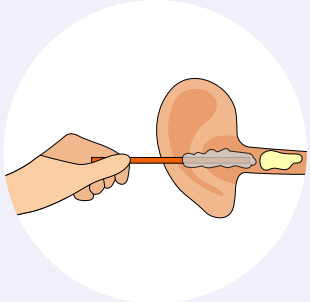
A small piece of cotton wool



Twist the stick round and round



Cotton wool should form a fluffy, soft tip



Insert the mop gently into the ear canal

Procedure:

1. Wash your hands.
2. Ask permission of the patient.
3. Examine the ear (see Practical B, module 2) to diagnose the underlying ear problem.
4. Pull off a small piece of cotton wool.
5. Gently pull it out into an oval shape.
6. Put the tip of the stick into the center of the cotton wool.
7. Twist the stick round and round with one hand whilst holding half of the cotton wool tightly against the stick with the thumb and index finger of your other hand.
8. Half of the cotton wool should extend from the end of the stick and form a fluffy, soft tip.
9. The rolled-up piece of cotton wool should be long enough so that when the soft tip is inserted into the ear canal there is still a portion sticking out of the ear canal. (You will then have a piece to hold on to and can ensure that all the cotton wool is removed completely from the ear canal.)
10. Pull the pinna back. Insert the mop gently into the ear canal, without pushing or forcing.
11. Pull out the mop and notice if there is pus or other fluid on it.
12. If required, repeat with another mop. Continue repeating until the mop is no longer wet when withdrawn.
13. Repeat otoscopy to confirm that all pus or fluid has been removed.



NOTE

If dry mopping causes fresh bleeding, or severe pain, the procedure should be stopped. Wait for the bleeding to stop and then examine the ear with an otoscope to check for any injury. If there is an injury, treat it by keeping the ear dry and with the use of antibiotics, if needed. If required, **refer** to a specialist.



DISCUSSION POINT 3.2

Discuss which of the two methods seems easier for you.

- Do you anticipate any problems in performing these procedures?
- Discuss with the group and your trainer.

PRACTICAL E: Instilling eardrops

Purpose:

To demonstrate how ear drops should be instilled. Trainees should also know how to explain this method to the patient they are treating.

Introduction:

Ear drops can be used to treat infections such as otitis externa or otitis media. To be most effective, ear drops should reach deep into the ear canal.

Equipment:

- Ear drops (e.g. antibiotics)
- Otoscope
- Speculum



Ask the patient to tilt their head to the side



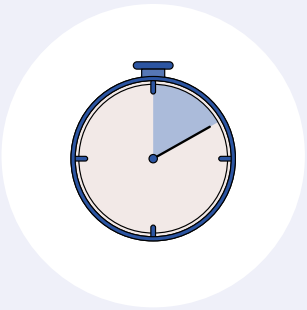
Gently pull the earlobe backwards



Put 2–3 drops into the ear canal



Massage the tragus



Keep the person on their side for 5 minutes

Procedure:

1. Wash your hands.
2. Ask permission of the patient.
3. Examine the ear (see Practical B).
4. If there is a lot of pus in the ear canal, drops will not work. Use either dry mopping

(Practical D) or ear washout (Practical C) to clear the pus. If an ear washout is performed, the ear should then be dried completely with a mop.

5. First warm the ear drops by holding them in your hands.
6. Ask the patient to tilt their head to the side, so that the ear being treated is facing upwards.
7. Put 2–3 drops into the ear canal. Try to not touch the ear canal with the bottle dropper. This might cause infection to spread or cause pain.
8. Gently rub or massage the pinna, especially the tragus, to encourage the ear drops to go down the ear canal.



NOTE

1. If the patient has a hole in the ear drum, the drops may go through the middle ear, into the eustachian tube, and be tasted in the back of the throat. This will not cause problems. Reassure the patient about this.
2. When teaching a patient to put in eardrops themselves at home, it is important to:
   - teach them also to clean their ears by dry mopping or wicking before putting in eardrops, if there is any discharge in the ear.
   - remind them to use the eardrops regularly.
   - ask the patient to return to the clinic regularly until the problem is resolved.



DISCUSSION POINT 3.3

- When putting eardrops into a baby's ear, how would you make sure that the baby does not move? Why do you think the baby might not keep still?
- How will you instruct a patient, or the parent of a baby or child, to use ear drops correctly.
- Discuss with the group and your trainer.

3.5. Important advice to share:

- Only use medicines that have been prescribed for you.
- Use clean towels or clean handkerchiefs to dry your ears.
- Don't put anything into your ear (except the prescribed medicine).
- Don't clean your ears with Q-tips, cotton buds, hair pins, or tooth picks!
- Don't let dirty water get into your ears.

ACTIVITY 3.3 Examining the ear of a child

Choose a partner. Each partner in turn performs the roles of "health worker" and "patient" or "parent of patient". Each partner should select one of the following problems:

1. A parent thinks their child has put something into the ear.
2. A parent brings a child who has severe pain in the ear, especially when the ear is touched.

The partner acting as "patient" or "parent of patient" should then explain the problem to the "health worker". Use your skills of imagination and role-play to enact a typical problem in a clinic. The partner acting as "health worker" should then question the "patient"/"parent" about the problem and then describe the symptoms to the instructor. As the "health worker", what do you think the cause could be? What do you think you may find when you examine the ear of the "patient"?

3.6 Who could the patient be referred to?

If you are unsure of a patient's problem or its treatment, consult with someone who has more experience – a more highly-trained or experienced nurse, clinical assistant, clinical practitioner, doctor or ENT specialist. If a person with more experience is not available or if there is an urgent need for treatment (e.g. acute ear pain) the patient should be referred to the local hospital.



NOTE

People commonly use cotton buds to clean wax from their ear canals. This can be harmful. Cotton buds should only be used outside and never inserted into the ear canal.

POST-TEST

Module 3: The outer ear: diagnose, treat, refer

Questions	True	False	Don't know
Some people have a tiny "hole" in front of their pinna which can become infected			
The pinna is examined with the use of an otoscope			
Pain due to infection of ear canal in increased on touching the tragus			
People should routinely clean their ear canals with q-tips or cotton buds to keep them clean			
Wax does not come out of the ear canal by itself and always must be removed			
Foreign bodies in the ear canal need to be removed			
To remove wax by an ear washout, use clean boiling hot water			
Otitis externa is treated with antibiotics			
Sometimes a person may get a bitter taste in mouth after putting in ear drops			
You should always test the hearing when a patient has a deformed ear			
Score			

Module 4

INFECTIONS OF THE MIDDLE EAR: DIAGNOSE, TREAT, REFER

Module 4

INFECTIONS OF THE MIDDLE EAR: DIAGNOSE, TREAT, REFER

PRE-TEST

Module 4: The infections of the middle ear: diagnose, treat, refer

Questions	True	False	Don't know
People with acute infection of the ear most commonly complain of pus discharge from the ear			
If the ear discharge has a foul smell, you should immediately refer the patient to a specialist			
You should only examine the ear which the patient's complaint relates to. There is no need to check the other ear			
Always mop the ear discharge before doing otoscopy			
In Chronic Suppurative Otitis Media there is a perforation in the eardrum and a discharge for more than 2 weeks			
The treatment of Acute Otitis Media is with antibiotic eardrops			
A dry perforation of the ear drum can start discharging if there is entry of water into the ear			
Infection of the ear can spread to the brain			
A dry perforation will always require to be closed by surgery			
Facial palsy (lame face) can be a complication of an ear infection			
Score			

LEARNING OBJECTIVES

In this module trainees will learn about:

- Recognize common diseases of the middle ear.
- Make and use a dry mop safely to clean the ear canal.
- Make and use a wick to clean discharge from the ear canal.
- Treat acute otitis media.
- Guide patients on how to manage a discharging ear.
- Refer patients, when required.

WHAT YOU WILL REQUIRE

- Otoscope with speculum
- Wooden stick applicator
- Cotton
- Tissues
- People with common middle ear problems (for demonstration)
- **Community resource 2:** Care of discharging ears (printed copies)

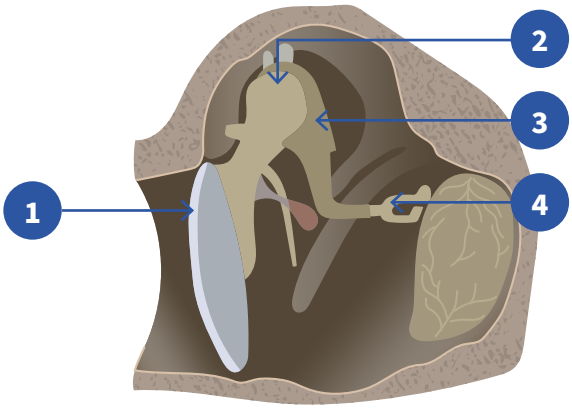
TERMINOLOGY

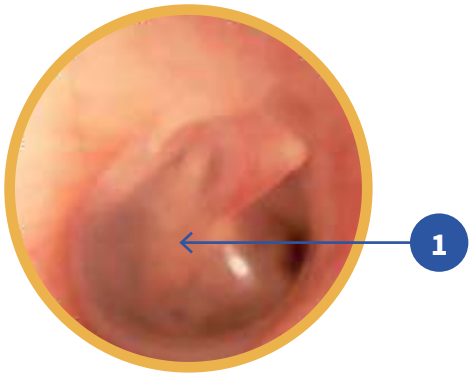
- Acute otitis media
- Antibiotic eardrops
- Chronic suppurative otitis media (CSOM)
- Dry mopping
- Dry perforation
- Eustachian tube
- Facial palsy
- Mastoiditis
- Meningitis/brain abscess
- Otitis media
- Perforation
- Wicking

4.1 Structure and function of the middle ear

You can revise the structure and function of the ear by referring back to Module 1.

ACTIVITY 4.1 Labelling parts of the middle ear





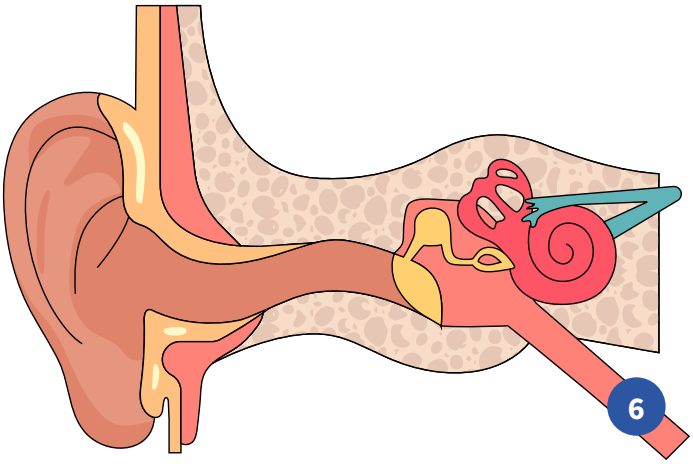
1. _____

2. _____

3. _____

4. _____





5. _____

6. _____

DISCUSSION POINT 4.1

- What does the ear drum do?
- What can damage the ear drum?

Discuss with the group and your trainer.

ACTIVITY 4.2 Examining the ear drum

Before starting this activity, you can revise Practical B on otoscopic examination and Practical D on dry mopping.

Use an otoscope to examine the ears of other trainees in your group.

- Wash your hands.
- Check the otoscope light.
- Clean and fix the speculum to the otoscope.
- Perform a proper examination of the ear drum by:
  - Pulling the pinna back and upwards to straighten the ear canal.
  - Moving the tip of the speculum gently around the inside of the ear until you can see the whole of the ear drum.

Important tips:

- Use a speculum that is large enough to see through and is comfortable for the size of the ear canal.
- If you cannot see the ear drum, or are not sure, discuss with your trainer.

Answer the following questions while you are looking at the ear drum:			
Can you see the ear drum?	☐ Yes	☐ No	☐ Not sure
Does the ear drum look normal and healthy?	☐ Yes	☐ No	☐ Not sure

Discuss the following with your trainer:

- What would you do if you could not see the ear drum?
- What would you do if you were not sure if you could see the ear drum?
- What would you do if the ear drum was not normal and healthy?
- What would you do if you were not sure if the ear drum was normal and healthy?

Activity 4.3 Examining the ear drum when otoscopes are not available

Using a torch light, examine the ears of other trainees in your group. Refer to Practical B for guidance. Discuss your findings with your trainer.

4.2 Infection or inflammation in the middle ear (otitis media)

The most common problem in the middle ear is infection or inflammation (swelling). This is called otitis media. There are two kinds of otitis media; each can be characterized by the time-scale of the disease:

1. Most ear infections last just a few days. This is known as **acute otitis media**. "Acute" means that a problem has been there for a short period of time only.
2. Sometimes ear infections last for weeks, months or even years; or they may keep returning. This is known as **chronic suppurative otitis media**. "Chronic" means that a problem has been there for a long time.

The next two sections describe these different diseases in greater detail.

4.3 Acute otitis media

Acute otitis media is an infection of the middle ear.

Who can get acute otitis media?

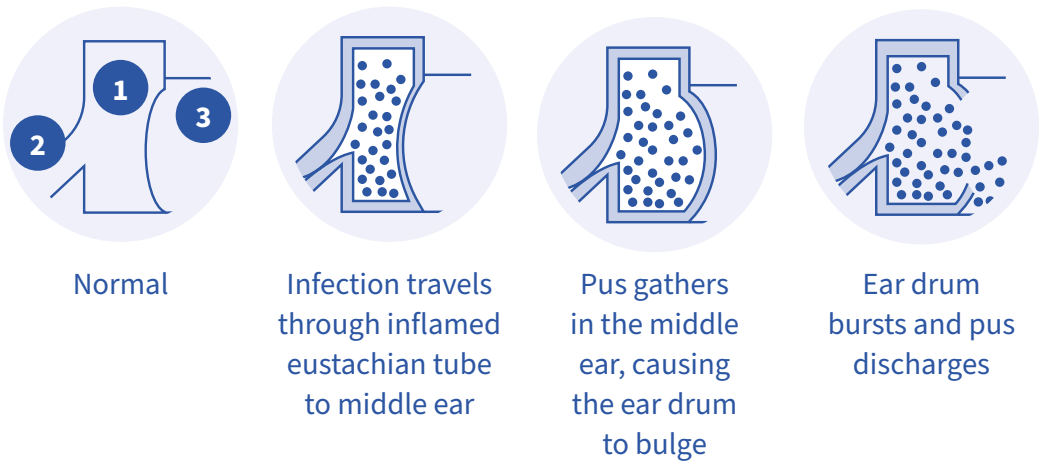
Acute otitis media often occurs in young children but can also occur in older children and in adults.

What happens in acute otitis media?

The infection may start as a cold or a sore throat which can spread from the nose or throat through the eustachian tube to the ear. The lining of the middle ear becomes infected and the ear drum inflamed (red). This causes fever and pain.

Pus may form and fill the middle ear space. If this occurs, the ear drum bulges.

If the infection is not treated, the ear drum may burst (a perforation) and pus will start to discharge from the ear. See the diagram below (Figure 4.1) to understand how acute otitis media develops.



Key

1. Middle ear
2. Eustachian tube
3. Ear canal

Figure 4.1 What happens in acute otitis media

What are the common complaints?

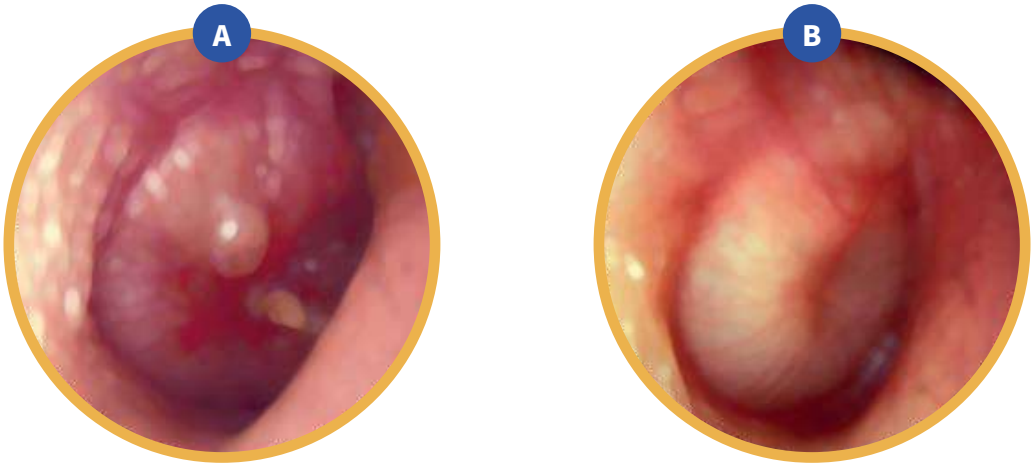
- Ear pain (otalgia): With very young children, they may not be able to say where it hurts but will cry and may pull at their ear.
- Fever: is commonly present.
- History of cold or sore throat.
- Sometimes, if the ear drum has burst, pus may come out of the ear.

What will you see?

Use an otoscope to examine both ears. Look at the ear drums. The ear drum on the infected side will be red and may be a bulging. If the ear drum has burst, you will see a perforated ear drum.

If pus in the ear canal is blocking the view of the ear drum, first mop the pus using a tissue wick, so that the ear drum can be seen. (Note: Ear washout will be painful and MUST NOT be performed when someone has acute ear pain.)

In addition to otoscopic examination, check behind both ears for pain or swelling (mastoiditis).



Bulging and inflamed tympanic membranes

DISCUSSION POINT 4.2

- Do you know of any home remedies that people use when they have pain in the ear?
- Can they cause harm?

Discuss with the group and your trainer.

What should you do?

- Advise a painkiller, if there is pain or fever.
- Treat with antibiotics for 5–7 days if:
  - the ear drum is bulging or has a hole
  - discharge is present
  - temperature is high
  - patient does not improve after 2 days.
- Provide antibiotic ear drops ONLY if there is ear discharge and a perforation of the ear drum (refer to Practical E).
- Make sure you see the patient again after 2 days and then again after 1 week.
- Check the patient's hearing when the infection has cleared.
- In cases where the ear is discharging, teach patients how to make a dry mop so that they can mop the discharge themselves at home (refer to Practical D).



NOTE

People sometimes use home remedies, such as putting hot oil into the ear, for ear pain. This should NOT be done!

Refer the person to a doctor or ENT specialist or nearby medical facility if there is:

- Severe, persistent headache on the side of infection
- Drowsiness
- Vomiting
- Neck stiffness
- Swelling behind the ear
- Infection does not resolve after 7 days of antibiotic treatment
- Hearing loss, after infection has cleared.

Remember: Acute otitis media (ear infection) should be treated with antibiotics when there is:

- A very high temperature
- A bulge or a hole in the ear drum
- Discharge of pus or blood from the ear
- An infection that is not improving after 2 days.

Antibiotics can be given by mouth, but if there is pus coming from the ear, dry mopping and antibiotic drops into the ear should be used additionally.



DISCUSSION POINT 4.3

What could happen if a case of acute otitis media remains untreated?

- Could it resolve spontaneously?
- Could the ear drum burst leading to a perforation and discharge?
- Could infection spread and cause complications/

Discuss with the group and your trainer.

4.4 Chronic suppurative otitis media (CSOM)

Chronic suppurative otitis media (CSOM) is a long-standing infection of the middle ear, which usually lasts longer than 2 weeks.

What happens in chronic suppurative otitis media?

CSOM may be a result of acute otitis media where the ear drum has burst and the perforation did not heal (Figure 4.2). Some children and adults with a hole in the ear drum have repeated infections. This results in pus discharge from the ear.

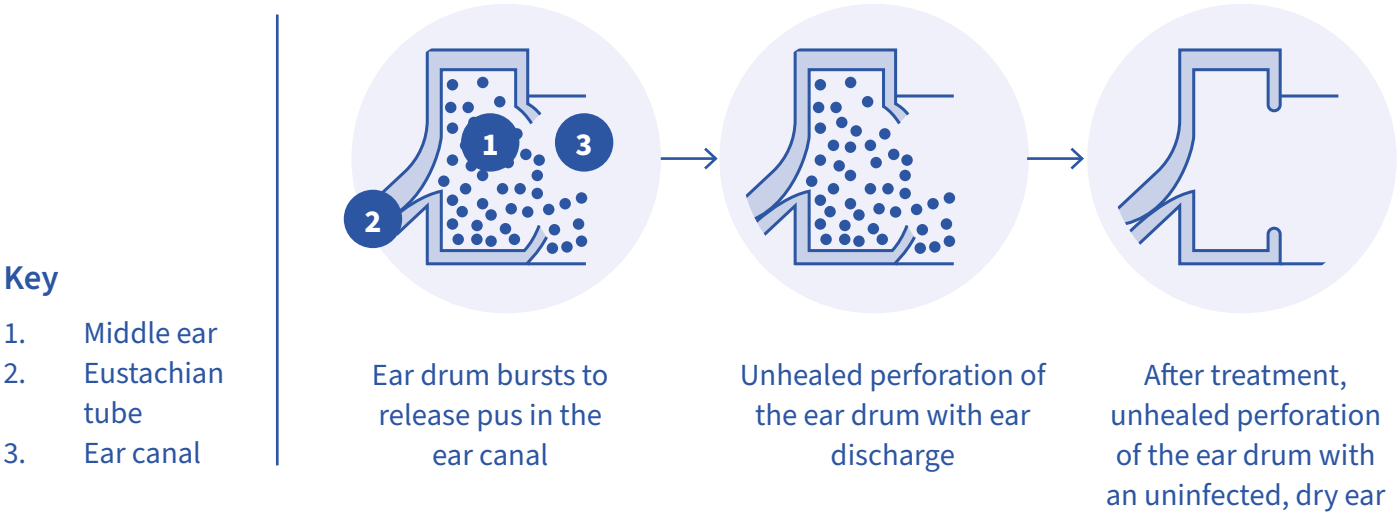


Figure 4.2 Course of chronic suppurative otitis media

What are the common complaints?

- Discharge from the ear, which may be regular or infrequent.
- Difficulty in hearing, especially in people with CSOM in both ears.

NOTE

Pain is NOT a common complaint with CSOM.

DISCUSSION POINT 4.4

What questions should you ask about the ear discharge? What other symptoms should you ask about?

Discuss with the group and your trainer.

What will you see?

Use an otoscope to look at the ear drum. If there is pus in the ear canal/s, dry mop it as shown in Practical D. Pus may be yellow or green in colour. Sometimes there may be some blood in the discharge. It may have a bad smell. Note the smell.

You will see a perforation in the ear drum. This may be small and only in one part of the ear drum, or it may be large. Note the size.

Check behind the ear for any swelling on the mastoid. Make sure you examine BOTH ears.



Inflamed ear drum with a moderately sized perforation



Large perforation of the ear drum

NOTE

If the discharge is excessive and cannot be properly mopped, perform a washout the ear with (non-alcohol-based) antiseptic to clean before giving the antibiotic ear drops. If you do a washout, it is VERY IMPORTANT to dry the ear properly afterwards.

DISCUSSION POINT 4.5

With the group and your trainer, discuss the following points about a dry mop/wick:

- Is the cotton wool likely to come off the stick while inserted in the ear?
- What would happen if it did?
- What would you do if the cotton wool or a piece of the paper/cloth became stuck in the ear canal?
- What would happen if the tip of the stick pushed through the cotton wool?
- Why should you use clean cotton wool or a clean piece of paper/cloth in each ear?
- Why should you wash your hands with soap and water and air dry both before and after the procedure?

Discuss with the group and your trainer.

What should you do?

- Provide (non-alcohol-based) antiseptic or antibiotic eardrops to be used 2–3 times a day for 1 week.
- Teach patients to keep the ear dry and dry mop each time before instilling eardrops.
- Show and instruct how to instill eardrops.
- Provide and explain to the patient the instruction sheet (see **Community resource 2**).
- Advise oral antibiotics ONLY where there is a feature of acute infection such as:
  - Red and inflamed ear drum
  - Blood in discharge
  - Pain
- See the patient again after 1 week to see if the infection has resolved.
- Check hearing after the ear is dry.
- Give the person complete instructions on how to use ear drops. You can also print the **Community resource 2** and give it to the patient.

NOTE

Infection where there is a hole in the ear drum is treated by:

- cleaning out the ear by dry mopping
- then putting antibiotic or antiseptic drops in the ear.

Refer the patient to a doctor or ENT specialist if there is:

- Persistent discharge even after treatment
- Foul smell in the discharge
- Swelling behind the ears
- Dizziness
- Facial paralysis (seen as asymmetry of the face)
- Hearing loss



NOTE

Sometimes treatment does not work or works for a short period of time only. If a person frequently has pus discharge from the ear, an operation to repair the ear drum may be required. A patient with long-standing ear discharge should be referred for consultation with an ENT doctor.

4.5 Dry perforation of the ear drum

Sometimes, you may see a dry perforation in the ear drum. Details of this condition are described below and illustrated in Figure 4.3.

What happens?

A perforation in the ear drum can be caused by a previous infection, acute or chronic suppurative otitis media, or sometimes by an injury to the ear.

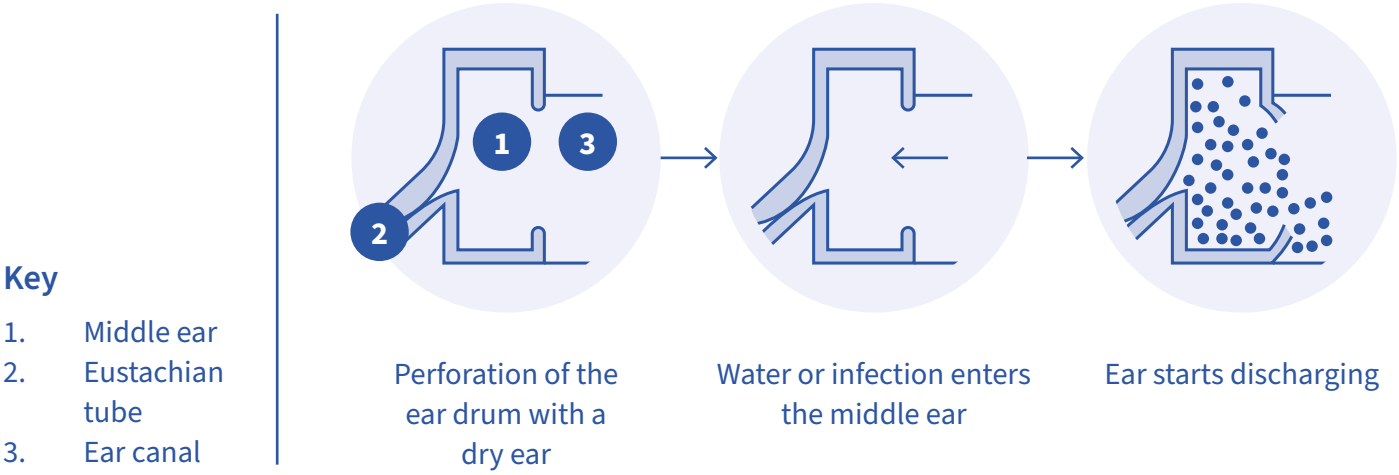


Figure 4.3 Infection of a dry perforation

What are the common complaints?

- At times there may be no complaints
- Difficulty in hearing
- Past history of ear discharge.

What will you see?

Using an otoscope, look at the ear drum. You may see a perforation in the ear drum which may vary in size and in location.



A small perforation in the right-sided ear drum

If a dry perforation is seen on otoscopy, ask the patient the following questions:

- Is there a complaint of ear discharge in the past?
- Has the patient had any injury recently?
- Is there any difficulty in hearing?



A large perforation in the right sided ear drum

What should you do?

- Check the patient's hearing
- Instruct the patient to keep the ear dry (refer to **Community resource 2**)
- Examine the ear again after 3 months
- Ask the patient to come back if there is any discharge or pain
- No eardrops are needed in dry perforation.

A dry perforation may heal on its own, especially if it is small and the ear is kept dry. However, in cases where the perforation it is not healing, it will need to be closed using surgery.

A dry perforation can start to discharge if there is infection in the ear. This may be due to:

- Entry of water into the ear
- A cold or cough.

Refer to a doctor or ENT specialist if there is:

- Hearing loss
- Discharge or pain
- Perforation that remains unchanged after 3 months.

With these cases, surgery may be required.

ACTIVITY 4.4 Role play

In groups of 3 or 4 trainees, discuss how you would instruct a patient or parent of a child to keep the ear dry. One of the trainees should act as "health worker", with the others acting as "patients/ parents" who are receiving instructions.

The "health worker" gives instructions as to how to keep the ear dry and should also explain why this is important. Trainees acting as "patients/ parents" should ask the "health worker" questions to clarify any points that are not clear. (Refer to the **Community resource 2** for instructions.)

4.6 Spread and complications of ear infections



DISCUSSION POINT 4.6

Where can infections of the ear spread? What sort of complications can arise?

Discuss with the group and your trainer.

A variety of complications can result from ear infections, including spread of infection to other areas of the body. Some complications are described as follows:

- Sometimes an ear infection can spread into the mastoid bone, and under the skin behind the pinna. This is called mastoiditis.
- Meningitis or brain abscess can occur when the infection spreads to the brain.
- Spread of infection to the inner ear can cause dizziness or vertigo.
- Infection can affect the facial nerve. When this occurs, muscles of the face on the side affected can be paralysed – this is known as facial palsy (or lame face). It is seen as asymmetry of the face and is most evident when the patient is asked to smile, blow cheeks or shut eyes.
- Infection can cause hearing loss and deafness due to the destruction of the ear drum, ossicles or infection of the inner ear.

A complication should be suspected if a patient with ear infection complains of:

- Severe headache
- Swelling behind the ear
- Vomiting
- Dizziness or vertigo
- Drowsiness
- Fits (e.g. episodes of shaking)
- Weakness of the face (facial palsy/lame face)

With such cases, refer the patient URGENTLY to the nearest hospital!

4.7 Mastoiditis

What happens?

With mastoiditis, the infection spreads to the bone behind the ear causing redness, swelling and collection of pus under the skin behind the pinna.

What are the common complaints?

- Pain behind the ear
- Fever
- Possible discharge from the ear.

What will you see?

- Swelling and redness behind the pinna
- Often the pus can be felt under the skin, feeling like a bag of liquid.
- There is pain on pressing the bone behind the pinna.

Questions to ask the patient:

- Do you have an ear infection or had an ear infection recently – pain, fever, discharge?

What should you do?

- **Refer urgently** to a hospital where the patient can receive prompt care. Mastoiditis needs urgent management!
- If there is no hospital or health centre nearby, antibiotics should be given by mouth until the patient can see a specialist.



A child with a left mastoid abscess

ACTIVITY 4.5 Role play

This activity should be performed in groups of two. One trainee acts as "health worker" and the other acts as the "parent" of a child with discharging ear or has a discharging ear herself. The "health worker" gives instructions to the "patient" or "parent" using the **Community resource 2** in 10–15 minutes. Trainees then switch roles.

POST-TEST

Module 4: The infections of the middle ear: diagnose, treat, refer

Questions	True	False	Don't know
People with acute infection of the ear most commonly complain of pus discharge from the ear			
If the ear discharge has a foul smell, you should immediately refer the patient to a specialist			
You should only examine the ear which the patient's complaint relates to. There is no need to check the other ear			
Always mop the ear discharge before doing otoscopy			
In Chronic Suppurative Otitis Media there is a perforation in the eardrum and a discharge for more than 2 weeks			
The treatment of Acute Otitis Media is with antibiotic eardrops			
A dry perforation of the ear drum can start discharging if there is entry of water into the ear			
Infection of the ear can spread to the brain			
A dry perforation will always require to be closed by surgery			
Facial palsy (lame face) can be a complication of an ear infection			
Score			

Module 5

OTHER PROBLEMS OF THE MIDDLE EAR: DIAGNOSE, TREAT, REFER

Module 5

OTHER PROBLEMS OF THE MIDDLE EAR: DIAGNOSE, TREAT, REFER

PRE-TEST

Module 5: Other problems of the middle ear: diagnose, treat, refer

Questions	True	False	Don't know
Glue ear is a condition with fluid in the ear canal			
Glue ear is most seen in adults and affects their speech			
A polyp is a fleshy swelling in the ear			
Cholesteatoma must be treated with surgery			
If untreated, cholesteatoma can cause serious complications that may lead to death			
Score			

LEARNING OBJECTIVES

In this module trainees will learn about:

- Recognize the signs of glue ear and cholesteatoma.
- Guide patients with glue ear and refer if required.
- Guide patients on the importance of addressing cholesteatoma as early as possible.

WHAT YOU WILL REQUIRE

- Otoscope with speculum
- Patients with ear problems, as indicated (for demonstration)

TERMINOLOGY

- Cholesteatoma
- Complaints associated with cholesteatoma
- Glue ear
- Polyp
- Pus

A variety of problems, other than infection, can arise in the middle ear. These issues are explained in detail in this module and include:

- Fluid in the middle ear, called glue ear.
- Skin of the ear drum growing inwards, called cholesteatoma.

5.1 Fluid in the middle ear (glue ear)

Who gets glue ear?

Glue ear is most commonly seen in young children but can sometimes occur in adults.

What happens?

Glue ear is when there is fluid behind an intact ear drum. It differs from an ear infection (acute otitis media) in that there is NO acute pain or fever. Glue ear can cause hearing loss because the fluid restricts movement of the ear drum and the bones of hearing. Hearing loss in children, when unaddressed, can lead to speech problems. Because glue ear is often undetected, it should be suspected if a child has speech problems.

What are the complaints?

- A feeling of fullness in the ear or a dull ache
- Difficulty in hearing
- Speech problems e.g. a child not speaking clearly or with delayed speech development
- Child not performing well at school
- There is NO complaint of ear discharge with glue ear.

What will you see?

Use an otoscope to look at the ear drum

- The ear drum will not look normal – it could be dull in appearance, or sunken, but it has NO perforation.
- At times, you may be able to see some fluid through the ear drum.

Check both ears. Also check the hearing. There may be slight/moderate hearing impairment.



Dull and sunken ear drum

What should you do?

If the symptoms are recent in onset, explain to the patient that at times glue ear may resolve by itself. However, with cases that are long-standing or do not resolve within three months, **refer** to a specialist for further consultation and treatment. The patient can return for a review after 3 months.

Refer to a specialist if:

- The symptoms persist upon review
- There is a complaint of speech problems or poor academic performance
- Hearing loss persists
- Patient is an adult and has glue ear is only one ear
- The ear is painful
- The patient has repeated acute infections (see details of acute otitis media in Module 4),

A specialist may decide to treat the glue ear with surgery by putting grommets (plastic tubes) into the ear drum, or by recommending the use a hearing aid.

NOTE

Glue ear often causes mild or moderate hearing loss that remains undetected. In children, this can affect their speech and learning at school. Children may not hear the teacher clearly and therefore fall behind in their studies.

DISCUSSION POINT 5.1

What questions would you ask a parent if you suspect glue ear in their child?

Consider questions such as:

- Is the child's hearing normal?
- Is the child's speech clear?
- Is the ear sometimes painful for the child?
- Does the child feel that the ear is blocked?

What could the answers be? Discuss with the group and your trainer.

5.2 Cholesteatoma

What happens?

The cause of cholesteatoma is unclear. The problem can occur in children and adults of any age.

What are the complaints?

- Foul smelling ear discharge
- Hearing loss
- At times, pain in the ear

What will you see?

Cholesteatoma is diagnosed by otoscopic examination of the ear.

- It looks like white or yellow wax stuck to, or going through, the ear drum.
- At times, a fleshy swelling may be seen (a polyp).
- There might be pus in the ear canal.



Cholesteatoma



Polyp in the ear



Cholesteatoma

What should you do?

- If you suspect cholesteatoma, **refer** the patient to an ENT specialist immediately. The only treatment for cholesteatoma is surgery.
- Stress to the patient that untreated cholesteatoma can lead to serious complications, and they should receive immediate attention.

DISCUSSION POINT 5.2

What complaints or findings could indicate a cholesteatoma?

Discuss with the group and your trainer.

NOTE

It is important to recognize cholesteatoma. Once started, cholesteatoma will continue to grow and will damage the bones in and around the ear. Eventually it can damage the bone above the ear and grow into the brain causing complications which can lead to death. People with cholesteatoma may have ear discharge, ear ache, or hearing loss. Often these symptoms have been with the person for months or years.

POST-TEST

Module 5: Other problems of the middle ear: diagnose, treat, refer

Questions	True	False	Don't know
Glue ear is a condition with fluid in the ear canal			
Glue ear is most seen in adults and affects their speech			
A polyp is a fleshy swelling in the ear			
Cholesteatoma must be treated with surgery			
If untreated, cholesteatoma can cause serious complications that may lead to death			
Score			

Module 6

HEARING LOSS: GRADES, CAUSES AND PREVENTION

Module 6

HEARING LOSS: GRADES, CAUSES AND PREVENTION

PRE-TEST

Module 6: Hearing loss: grades, causes and prevention

Questions	True	False	Don't know
People with hearing loss tend to notice their problems more in quiet places than in noisy ones			
Hearing loss is more common in child whose parents are closely related to each other (e.g. who are 1st or 2nd cousins)			
Babies born with weight less than 3 kg are at risk for hearing loss			
Wax in the ear usually causes severe hearing loss			
Certain medicines can cause lasting damage to hearing			
COVID-19 infection can cause hearing loss in some cases			
Vaccination can eliminate hearing loss			
Home remedies (like putting hot oil in the ear) are effective and should be promoted			
90% of hearing loss in children is due to preventable causes			
Score			

LEARNING OBJECTIVES

By the end of this module the trainee should be able to:

- Discuss the common causes of hearing loss and how these may be prevented.

TERMINOLOGY

- Birth asphyxia
- Consanguinity
- Earplugs, earmuffs
- Genetic (hereditary) causes
- Genetic counselling
- Headphones
- Ototoxic medicines
- Safe listening practices



DISCUSSION POINT 6.1

Block your ears with earplugs or cotton wool for a short period. How well do you hear? How do you feel?

Discuss with the group and your trainer.

6.1 Grades of hearing loss

Hearing loss varies in severity from mild to total. Table 6.1 below explains the hearing experience of people with different grades of hearing loss. Since the problems tend to be greater in noisy places compared to quiet places, the table indicates the experience of people with different grades of hearing loss in these two settings.

Hearing difficulties are experienced more in noisy places

Table 6.1 Hearing experiences for different grades of hearing loss

Grade	Hearing experience for most adults in a quiet environment	Hearing experience for most adults in a noisy environment
Normal hearing	No problem hearing sounds	No, or minimal, problem hearing sounds
Mild hearing loss	Does not have problems hearing conversational speech	May have difficulty hearing conversational speech
Moderate hearing loss	May have difficulty hearing conversational speech	Difficulty hearing conversational speech and taking part in conversation
Moderately severe hearing loss	Difficulty hearing conversational speech; can hear raised voices without difficulty	Difficulty hearing most speech and taking part in conversation
Severe hearing loss	Does not hear most conversational speech; may have difficulty hearing and understanding raised voices	Extreme difficulty hearing speech and taking part in conversation
Profound hearing loss	Extreme difficulty hearing raised voices	Conversational speech cannot be heard
Complete or total hearing loss/ deafness	Cannot hear speech and most environmental sounds	Cannot hear speech and most environmental sounds
Unilateral or single-sided hearing loss	May not have problems unless sound is near the poorer hearing ear. May have difficulty in locating sounds	May have difficulty hearing speech and taking part in conversation, and in locating sounds

DISCUSSION POINT 6.2

Think of some common causes of hearing loss that you know of. Do you think some of the causes can be prevented?

Discuss with your group and the trainer.

6.2 Causes of hearing loss across the life course

There are many causes that can affect a person's hearing and lead to hearing loss at different stages of the life course. These are summarized in Table 6.2 on the following page.

Table 6.2 Causes of hearing loss across the life course

Stage of life course	Nature of cause	Causes	Points to consider
a) Causes before birth	Genetic causes 	• Hearing loss can be hereditary and carried through generations of a family. • There can be a mutation (error) in one of the genes* that codes for hearing. This means that even babies with no family history of hearing loss can be born deaf or hard of hearing. • Hearing loss is more common in children born to consanguineous** parents.	Genetic counselling can help people with a family history of hearing loss to understand the risk in their baby. To identify hearing loss at the earliest stage, a baby's hearing should be checked, especially if a family member is deaf, or where parents have a consanguineous marriage.
	Problems during pregnancy 	• Diseases during pregnancy, such as rubella and other viral infections. • Sexually transmitted diseases, such as syphilis. • Medicines that can damage hearing when taken during pregnancy (ototoxic medicines).	Deafness that is caused by maternal infections can be prevented through: • Vaccination • Good hygiene • Timely identification and treatment of infection.

* Genes are codes in our bodies that tells the body how to develop, grow and work. An error in the part of the code that affects ear and hearing could lead to hearing loss.

** Consanguinity refers to marriage between people who are closely related, usually between first or second cousins.

<table>
<tr>
<td>b) Difficulties during or just after birth</td>
<td></td>
<td>
• Premature birth or babies born with low birth weight. Babies that weigh less than 1.5 kg at birth are at risk of hearing loss.
• Difficult birth when a baby suffers from lack of oxygen (birth asphyxia); this can have a permanent effect on a baby's hearing. Lack of oxygen can also result in other developmental problems.
• Jaundice after birth: if a baby experiences high levels of jaundice this can cause permanent damage to hearing.
</td>
<td rowspan="4">
NOTE
These causes can be avoided through good maternal and child care.
Where a child has any of these risk factors, early testing for hearing loss can help their rehabilitation.
</td>
</tr>
<tr>
<td rowspan="3">c) Causes during childhood and later life</td>
<td>Wax
</td>
<td>Wax that is blocking the ear canal can cause hearing loss at any age.</td>
</tr>
<tr>
<td>Ear infections
</td>
<td>Infections can cause problems in the ear canal, the middle ear, or the inner ear. These are described in the earlier modules.</td>
<td rowspan="2">Ear infections can be avoided by following healthy ear practices (see Module 9). Wax, ear infections and glue ear commonly cause mild to moderately severe hearing loss. These conditions can often be treated through wax removal, medicines or surgery.</td>
</tr>
<tr>
<td>Glue ear
</td>
<td>Glue ear is a common cause of hearing loss in children (as described in Module 5).</td>
</tr>
<tr>
<td></td>
<td>Medicines and chemicals can damage hearing (ototoxic damage)
</td>
<td>Causes of ototoxic damage include:
• Antibiotics such as Streptomycin and Gentamicin.
• Antimalarials such as Quinine and Chloroquine.
• Injectable given for treatment of multidrug resistant tuberculosis.
• Work-related ototoxic chemicals such as solvents.</td>
<td>Safe use of medicines can prevent ototoxic hearing loss.
Where such ototoxic treatment is essential, it is important that hearing is checked regularly to detect hearing loss at the earliest stage and take appropriate action.</td>
</tr>
</table>

	Noise 	Working in noisy places, listening to loud music, exposure to louds sounds such as from a gunshot, blast or explosion. (Details about noise-induced hearing loss and its prevention are elaborated in Module 9.)	Hearing loss due to noise can be fully avoided but cannot be treated once it develops. (Refer to **Community resource 5**: Tips for Safe listening).
	Accidents 	Head injury or injury to the ear can cause hearing loss.	Avoid injury over the ear (e.g. slaps and blows). Protect ears by using a safety helmet.
	Ageing 	As people get older, they commonly develop some hearing loss due to age-related changes in the cochlea and the hearing nerve.	Hearing loss commonly develops as a person ages. If it is identified early, older people can maintain good communication and continue to enjoy a fulfilling life with the use of assistive devices.
	Other ear conditions 	Conditions such as otosclerosis (where there is extra growth of bone within the ear) and tumours of the ear, can occasionally be the cause of hearing loss. These conditions are not addressed in this training manual.	These conditions usually require special investigation. When the cause of hearing loss is unclear, the person should be referred to a specialist.
	Other illnesses 	Hearing loss can occur in people with diseases such as meningitis, measles, mumps, HIV/AIDS, Ebola virus disease, or COVID-19 infection. The hearing loss may be caused by the infection or be a consequence of its treatment. Chronic illnesses such as hypertension and diabetes also contribute to the progression of hearing loss.	Many of these diseases can be prevented through routine immunization! Encourage parents to get their children fully immunized.

ACTIVITY 6.1 Discussion

Trainees should perform this activity in groups of 4 or 5. For approximately 30 minutes, discuss how hearing loss can be prevented in the community. All groups should then come together to share their ideas (15–30 minutes).

6.3 Simple steps to prevent hearing loss



Timely and complete vaccination can prevent diseases such as rubella, measles, mumps, and meningitis that can cause hearing loss.



Good care for mothers and babies before, during, and after the birth can avoid deafness due to low birth weight, lack of oxygen at time of birth, or jaundice.



If mothers have any illness during pregnancy they must be treated suitably and, where possible, with medicines that do not affect hearing.



People who work in noisy places should regularly use earplugs or ear muffs to protect their ears. They should also have regular hearing check-ups.



The use of loudspeakers, blowing of horns, or use of other noisy equipment should be avoided. When using these, ears should be protected with earplugs or ear muffs.



Safe listening practices can prevent hearing loss that is caused by listening to loud music (Refer to **Community resource 5**: Tips for Safe listening).



People should be aware that certain medicines can affect their ears. They must ask their doctor if the medicines they receive can affect their hearing, and how this can be avoided.



To avoid injury or infection, nothing should be inserted into the ears.



People should not slap anyone, especially over their ears.



In the event of any problem or pain with the ear, the opinion of a health worker or doctor should be sought at the earliest possible time.



Home remedies such as hot oil (in the ear) should not be used.



With any suspicion of hearing loss, a person should get their (or their child's) hearing checked.

Many cases of hearing loss can be prevented.

It is estimated that in children, 60% of hearing loss can be prevented through proper care.

POST-TEST

Module 6: Hearing loss: grades, causes and prevention

Questions	True	False	Don't know
People with hearing loss tend to notice their problems more in quiet places than in noisy ones			
Hearing loss is more common in child whose parents are closely related to each other (e.g. who are 1st or 2nd cousins)			
Babies born with weight less than 3 kg are at risk for hearing loss			
Wax in the ear usually causes severe hearing loss			
Certain medicines can cause lasting damage to hearing			
COVID-19 infection can cause hearing loss in some cases			
Vaccination can eliminate hearing loss			
Home remedies (like putting hot oil in the ear) are effective and should be promoted			
90% of hearing loss in children is due to preventable causes			
Score			

Module 7

IDENTIFYING HEARING LOSS IN CHILDREN AND ADULTS

Module 7

IDENTIFYING HEARING LOSS IN CHILDREN AND ADULTS

PRE-TEST

Module 7: Identifying hearing loss in children and adults

Questions	True	False	Don't know
By one year of age a child can usually speak two words like "give water"			
If parents tell you that their child is not developing speech as expected, you should reassure them that this is normal since some children may be "slow developers"			
Every baby should have a hearing test			
To check the hearing in a small child (e.g. 4 years old) you can instruct them to perform simple actions like touching their nose			
hearWHO is a WHO app to check hearing			
People with normal hearing can hear you when you whisper			
Older adults with hearing loss are likely to speak very softly			
Ringing in the ear is known as "tinnitus"			
Audiogram is a map of the ear			
Even without specialized equipment you can check for hearing loss at all ages			
Score			

LEARNING OBJECTIVES

By the end of this module the trainee should be able to:

- List the common milestones for hearing in babies and children.
- Suspect hearing loss in children and adults.
- Perform different tests (without equipment) depending upon the age of the individual.
- Use hearWHOpro or similar tests.
- Understand when a person should be referred for further testing.
- Know about tests that will be conducted at a medical facility.

PRACTICAL SKILLS COVERED

PRACTICAL F: Distraction test of hearing
PRACTICAL G: Voice tests in children aged 3–7 years
PRACTICAL H: Use of hearWHOpro
PRACTICAL I: Whispered voice tests

WHAT YOU WILL REQUIRE

- Wooden blocks or similar toy (the toy should not make any sound)
- Towel or sheet
- Rattle
- One or more smartphones with hearWHO and hearWHOpro downloaded
- Headphones or earphones (if possible, use with noise cancellation)
- **Community resource 3:** Hearing and language milestones in children (printed copies)

TERMINOLOGY

- Automated auditory brainstem response (AABR) test
- Conditioned play audiometry
- Distraction test of hearing
- Hearing-related milestones
- hearWHO app and hearWHOpro app
- Landmarks for hearing
- Otoacoustic emissions (OAE) test
- Smartphone app
- Whispered voice test



DISCUSSION POINT 7.1

- How do babies learn language and develop speech? How is hearing related to the development of language? What would be the outcome if a child's deafness remained unaddressed?

Discuss with the group and your trainer.

Identifying hearing loss in a timely manner is very important to make sure that people receive the treatment or rehabilitation they need. As a health worker, you will be the first person a family may come to for advice if they notice any problems, either in children or in adults. Because the methods and means for checking hearing vary according to the age of the person to be tested, this module is divided into three sections:

1. **Identifying hearing loss in children aged 0–3 years**
2. **Identifying hearing loss in children aged above 3 years**
3. **Identifying hearing loss in adults**

Each part explains when you should suspect hearing loss, and how to check hearing without specialized equipment. It also provides information on which specialized hearing tests should be conducted.

7.1 Common landmarks for hearing and speech development in children

The development of hearing and language in children can be assessed through certain common developmental landmarks. In order to assess hearing loss in babies and children, it is important to be aware of these landmarks and to check if the baby or child is reaching the age-appropriate landmarks for hearing, responding, and talking. These landmarks are indicators of healthy hearing and talking, and their absence may indicate hearing loss. They are described in Table 7.1 on the following page.



DISCUSSION POINT 7.2

Have you observed a baby and how they start responding to sounds and develop speech?

Discuss with the group and your trainer.

Table 7.1a Landmarks for hearing and speech development*

Age	Hearing and responding	Talking
Birth–3 months 	• Startles at loud sounds • Becomes quiets or smiles when parent is speaking	• Makes cooing sounds
4–6 months 	• Moves eyes in the direction of sound • Responds to changes in the parent's tone of voice • Notices toys that make sounds • Pays attention to music	• Coos and babbles when playing alone or with someone • Makes speech-like babbling sounds, such as "pa", "ba", or "mi"
7 months – 1 year 	• Turns and looks in the direction of sound • Turns when someone calls by name • Understands words for common items and people, such as "water", "daddy" • Starts to respond to simple words and phrases, such as • "No", "Come here", or "Want more?"	• Babbles long strings of sounds, such as "mimi", "upup", "babababa" • Imitates different speech sounds • Says one or two words, such as "hi", "dog", "dada", "mama", or "uh-oh". (This will likely happen around the first birthday, but sounds may not be clear)
1–2 years 	• Points to a few body parts when asked • Follows one-part directions, such as "Roll the ball" or "Hold the toy" • Responds to simple questions, such as "Who's that?" or "Where's your shoe?" • Listens to simple stories, songs, and rhymes	• Uses a lot of new words • Asks questions, such as "What's that?" or "Who's that?" • Puts two words together, such as "more apple" or "no bed".
2–3 years 	• Understands opposites, such as go–stop, big–little, and up–down • Follows two-part directions, such as "Get the spoon" and "Put on the table" • Understands new words quickly	• Has a word for almost everything • Talks about things that are not in the room • Puts 3 words together to talk about things • May repeat some words and sounds

3–4 years 	• Responds when called from another room • Understands words for some colours, such as red, blue, and green • Understands words for some shapes, such as circle and square • Understands words for family members, such as brother, grandmother, or aunt	• Answers simple “who”, “what”, and “where” questions. • Says rhyming words, such as hat–cat • Says words that most people can understand • Asks “when” and “how” questions • Puts 4 words together
4–5 years 	• Follows longer directions, such as “Put your pyjamas on”, “Brush your teeth”, or “Choose a book” • Hears and understands most of what is said at home and in school	• Can talk without repeating sounds or words most of the time • Names letters and numbers • Tells a short story • Keeps a conversation going

* Adapted from the American Speech-Language-Hearing Association’s guidelines for healthy speech, language, and hearing development in youths. See: https://www.asha.org/public/speech/development/chart/.

Hearing loss may not be easily suspected or recognized in babies and young children. Any child could have hearing loss, and as a health worker you must know when to suspect hearing loss and perform further tests or refer.



NOTE

Parents may suspect that their child has some hearing problem or notice that their child is not developing speech as they should. Always consider such concerns and **refer** the parents to get the child’s hearing tested. Do not ignore!

7.2 Identifying hearing loss in children aged 0–3 years

It is important to suspect hearing loss in a child aged 0–3 years if:

a. There has been a problem during pregnancy or birth, such as:
   - infection in the mother while she was pregnant with the baby. The mother may give a history of having had fever or rashes during the pregnancy.
   - receiving medicines during pregnancy that can affect hearing. Such medicines are often prescribed for treatment of malaria or tuberculosis (TB).
   - Lack of oxygen at time of birth: parent may inform that the labour was long and difficult, or that the child had a cord around the neck or was blue at birth.
   - Low birth weight baby: if the baby had a birth weight of below 1500 grams.
   - Jaundice: if the child had high levels of jaundice, parents may inform you that the child had turned very yellow in the days after birth, or had to be given light therapy, or received a blood (exchange) transfusion.
   - Prolonged stay in the intensive care unit.

b. there is family history of deafness in the family;

c. there are any visible abnormalities of the head and neck e.g. malformed or absent ear, recessed jaw, eyes of different colours;

d. there is history of ear discharge;

e. the child has delayed development of speech and hearing-related milestones: most children will follow a similar pattern of responding to sounds and using language as they grow. However, if a child is born deaf or develops hearing loss, they would not respond to sounds or start speaking in a manner usually found in children of that age.

Common hearing-related milestones in children during the first few years of life are outlined in Table 7.1. This information is available in the form of **Community resource 3** on Hearing and language milestones in children, which can be shared with parents.



NOTE

If a child does not achieve the common hearing-related milestones, you should suspect hearing loss and check for it.

Checking hearing in children aged 0–3 years without equipment (in the community or in a primary care setting)

It is important that every baby that you see has their hearing checked. This is particularly important for babies who have a risk factor for hearing loss, or who delay in reaching the common hearing milestones (see age ranges “a” and “b” below for details of how this can be done). Even moderate hearing loss can be identified at a very early stage in babies. If they receive rehabilitation within the first few months of life, they can learn language far better than if the hearing loss is identified later. For this reason, in some countries every baby has a test of their hearing soon after birth.

If a baby or young child has not had a hearing test – either because a test was not available or the child was “missed” – and there is any suspicion of hearing loss, **refer** the child to the nearest health facility where such a specialized hearing test is available.

NOTE

Hearing should be tested in every baby or young child. This is especially important where there is concern that hearing may not be normal, or language not developing as expected.

There are different methods for testing hearing, depending upon the age of the child:

a) Age birth to 6 months

Observation: To test the hearing of such a small baby try to observe its response to sounds, for example, observe if the baby wakes up or startles when there is a loud sound and if the baby responds to the parent's voice.



Observating a baby's response to sounds

b) Age 6 months to 3 years

Distraction test of hearing: This is the simplest test which can help detect suspected hearing loss in a baby more than 6 months of age. A rattle or the spoken voice is used, and the child's response observed. Details of the distraction test are given in Practical F. The steps to be taken following a distraction hearing test are set out in Table 7.2 below.

Table 7.2 Distraction test for hearing and follow-up

Distraction Test (age 6 months to 3 years)	
Test Result	Follow-up
Fails	**Refer** for hearing test
Passes	Ask parents to watch for hearing milestones and review at next visit
Passes: but parents are concerned	**Refer** for hearing test

Some babies referred for testing may have a normal hearing result; however, if you have any suspicion of hearing loss, do not hesitate to **refer** them for specialized testing.

When a baby passes the distraction test, give parents the hearing milestones development sheet (**Community resource 3**) so that they can use this to monitor their baby's hearing and speech development at home. If there is any delay in the milestones, parents should take the baby for a specialized hearing test.

It is important to remember that hearing loss can develop in infancy and early childhood. Even if babies or young children pass the distraction test, ask the parents or caregivers to bring the child back for testing if they are worried about hearing loss at any age.

NOTE

If there is ANY concern about the hearing of a baby or young child, **refer** for a specialized hearing test.

PRACTICAL F: Distraction test

Purpose:

The Distraction test can help us to suspect hearing loss in babies between 6 months to 3 years of age by observing their response to sounds.

Equipment:

- Two people to perform the test (one as the distractor and one as the tester)
- Wooden blocks or similar toy (the toy should not make any noise)
- A towel or sheet
- A rattle



Distraction test

Procedure:

1. Make sure you are in a quiet room.
2. The baby should sit in the lap of the parent. The parent should be asked to sit still and be silent.
3. The “distractor” should sit in front of the baby, with the wooden blocks (or another toy).
4. The “tester” should sit behind and to the side of the baby, holding the rattle. The tester should be about 1 metre away from the baby.
5. The distractor plays a game with the baby, for example, stacking wooden blocks on top of each other.
6. The distractor stops playing and covers the blocks (or the toy) with a towel or sheet.
7. The tester then gently shakes the rattle for five seconds. The baby should turn towards the sound.
8. The tester then moves to the other side (of the baby).
9. Steps 5 to 7 are then repeated. But first, repeat steps 5 and 6. Do not make any sound. The baby should not turn its head. This is to crosscheck that when Step 7 is repeated, the baby is actually turning its head because of hearing the sound of the rattle.
10. If the baby does not turn towards the sound, the test can be repeated with a louder rattle. If there is no response the child should be referred to a specialist for further tests.



NOTE

If a rattle is not available, the tester can use their voice. A low pitch “oooo” sound and a medium pitch “eeee” sound should be used on each side. Remember, if you have any doubt, **refer**!

7.3 Identifying hearing loss in children aged above 3 years

Suspect hearing loss if the child:

- is not speaking or showing evidence of speech and language development at the level expected for a child of its age (as described in Table 7.1).
- often asks you to repeat what you say.
- turns up the volume of the television or has trouble hearing what is being said in telephone conversations.
- is performing poorly at school or has behavioural problems. If a child is not hearing instructions clearly, they often do not respond correctly or perform well.

Has features suggesting an ear infection, such as:

- history of discharge (pus) from the ear/s, also referred to as "runny" ears;
- complaint of pain, feeling of blockage or ringing in the ears; or
- fever with earache.

Hearing loss can be tested without equipment in a child aged above 3 years (in the community or in a primary health care setting) by:

1. Voice test (Practical G): most suitable for children aged 3–7 years.
2. Whispered voice test (Practical H): suitable for children aged above 7 years.

PRACTICAL G: Voice test

Introduction:

This test can be used to check the hearing of a child aged 3–7 years. In this test, the child is asked to perform some simple actions.

Equipment:

None required.



Voice Test

Procedure:

1. First, make sure the child is comfortable and ready to follow your instructions.
2. Make sure you are in a quiet place and speak in a language that the child understands.
3. Give examples of the type of instructions you will give and ask the child to perform the action. For example, ask her to show you where her head is, or her tummy. Perform the action yourself while you say the words (e.g. if you say “show me your teeth”, you can point towards your teeth).
4. Repeat this a few times. Once you are sure that the child understands what to do, ask another person to stand behind the child and give the instructions, starting with a whispered voice.
5. You can sit in front of the child and observe her responses.
6. The person behind the child then whispers instructions such as “touch your nose”, “point to your mouth” or “touch your tummy”. The person should not use the same instructions as those given earlier in your examples.
7. If the child does not respond by performing the instructed action, the person standing behind should repeat the instruction or give a different whispered command.
8. If the child still does not respond, the person standing behind should raise their voice to a conversational level.
9. Repeat a few times or change the command if the child is still not responding.
10. If the child fails to respond, you can try and explain the test again and try once more.
11. If still there is no clear response, **refer** the child for specialized hearing testing.



NOTE

With cases where you have any doubts, **refer**!

DISCUSSION POINT 7.3

What do you think might be suitable instructions for voice tests in children in your community?

Discuss with the group and your trainer.

PRACTICAL H: Whispered voice test

Introduction:

The whispered voice test is a basic test of hearing. It can be used in children aged above 7 years as well as in adults.

Equipment:

None required.



Figure 7.1 Conducting a whispered voice test*

Procedure: (see Figure 7.1)

1. Make sure you are in a quiet space.
2. Wash your hands.
3. Tell the person or child being tested: "During the hearing test, I will ask you to cover the ear that is not being tested by putting your finger over your ear. I will then say some letters and numbers out loud. You must repeat them after me." Show the person how to cover their ear with a finger pressing the tragus.
4. With the person sitting on a chair, stand behind them at an arm's length away (approximately 2 feet).

5. Ask the person to cover the ear that is NOT being tested with one finger over the tragus. Ask the person to slowly move the finger in a circular motion.
6. Take a deep breath and exhale fully before whispering the number-letter combination.
7. Give a number-letter-number combination (for example “4-K-2”).
8. Ask the person to repeat what they hear.
9. If the person successfully repeats the combination, move on to testing the other ear. Ensure that the number-letter-number combination is different for each ear.
10. If the person is unsuccessful in repeating the combination correctly, reattempt testing with a different number-letter combination. If the person is successful in repeating 3 total letters and/or numbers correctly (out of a total of 6 numbers or letters spoken for that ear) after a second attempt, it is considered a PASS.
11. Remember to document the results.

ADDITIONAL NOTES

1. If person passes the whispered voice test it is likely that they have normal hearing. However, it is also possible that a person has a mild hearing loss or a hearing loss only affecting some frequencies. For this reason, the whispered voice test is not a completely reliable test for hearing loss.
2. It is important to stand at an arm’s length behind the person being tested, and to breathe out before whispering the letters and numbers. If not, the whisper can be too loud, making it too easy to pass the test.
3. If a person fails the whisper voice test of hearing, or there are other reasons to give concern for hearing loss, they should be sent for a formal hearing test.

* Adapted from the University of California, San Francisco, United States of America. See: https://geriatrics.ucsf.edu/sites/geriatrics.ucsf.edu/files/2018-06/whispertest.pdf.

7.4 Identifying hearing loss in adults

DISCUSSION POINT 7.4

Do you know of an adult who has hearing loss? What are the indications of a person having hearing loss?

Discuss with the group and your trainer.

Suspect hearing loss if the person:

- speaks loudly or very softly (older adults with hearing loss are likely to speak loudly and this can be an important indication of hearing loss. On the other hand, some people with hearing loss may speak very softly);
- has difficulty in hearing what is being said, especially in noisy places (e.g. restaurants);
- has difficulty in hearing someone on the telephone;
- often asks people to repeat themselves;
- increases the volume of the television or radio;
- complains of a ringing sensation in the ear (tinnitus): or
- has features suggestive of an ear infection, such as ear discharge or ear pain.



Checking hearing in adults without equipment (at community or primary care level)

Hearing can be checked through simple tests carried out in the community or at home with the use of the hearWHO app. Launched by WHO, hearWHO is a validated option that can be used for hearing screening in the community. There are two versions of the hearWHO app:

1. **hearWHO for personal use:** any person with an android or iOS-based smartphone can download and start using the app following its instructions.
2. **hearWHOpro for health workers**: a health worker can use this app to screen adults within the community for hearing loss.

Now look at Practical I on the use of the hearWHOpro app

3. **Whispered voice test:** This is also an option to screen for hearing loss in adults. See Practical H on the whispered voice test of hearing. Any person failing the test should be sent for a specialized hearing assessment using audiometry.

Now look at Practical H on the whispered voice test of hearing

PRACTICAL I: The hearWHOpro app

Introduction:

The hearWHOpro app is a validated app that can be used to screen for hearing loss. It is based on the digits-in-noise technology. The app presents sets of three digits, delivered over background noise, which one is prompted to respond to. This screening determines one's signal to noise ratio (SNR) which is indicative of the person's hearing ability.

Equipment:

Android or iOS-based device installed with hearWHOpro app. The hearWHOpro app can be downloaded from the App store or Play store, free of cost. Currently hearWHOpro is available in Chinese, English, French, and Spanish.

A pair of good quality headphones (with noise cancellation, if possible).

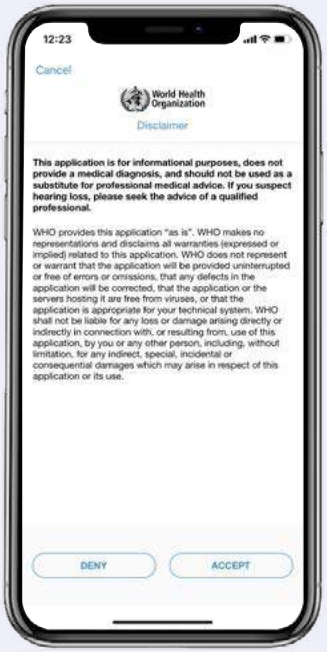


The hearWHOpro app

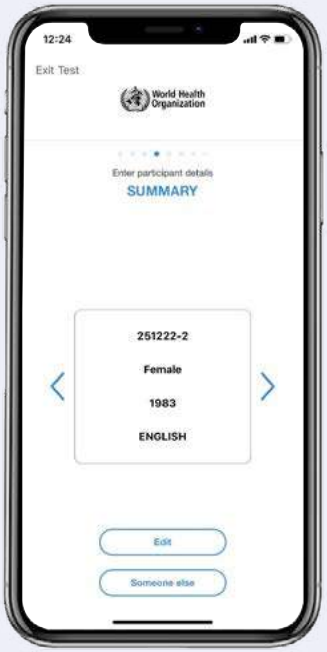
Procedure:

1. Make sure the app is installed on your device (e.g. your smartphone).
2. Familiarize yourself with all screens of the app before you use it.
3. In order to use the app properly, you need to do so in a quiet place. The test results will NOT be reliable if the background noise is high.
4. You will need a pair of good quality headphones that work with your device. Make sure to clean the headphones after a person has been tested.
5. Make sure to read the disclaimer to the person being tested and ask for their agreement before checking their hearing. If they do not agree, you must not proceed with the test.

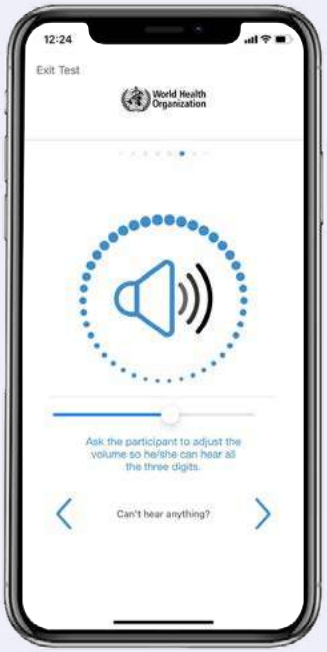
6. Enter each person's details (e.g. identification number or name; and sex). Then select the year of birth.
7. Ask the person if English is their first language (since the digits will be presented in English). (This information is important to assess the participant's score).
8. Now apply the headphones properly on the person to be tested (fully on the ears).
9. On the next screen the participant will hear three sample digits being spoken. They must adjust the volume to a level when they can comfortably hear all three digits. (Note that the volume should be adjusted to a comfortable level, not the lowest level heard.)
10. Explain the test sequence to the person so that they know what to expect. Tell them that:
    a. When they start the test, they will hear sets of three digits against background noise.
    b. They must listen carefully and identify the digits. Then they must enter the digits into the keypad on the screen and then press "OK" to move ahead.
    c. If they are not sure, they have to guess the digits, enter them and then press "OK". It is important that they do this every time, even when they are not sure of what digits they heard.
11. A total of 23 sets of digits will be presented one after the other.
12. Make sure that the person can do the test undisturbed for 3–4 minutes. When they are ready to start, ask them to press "Start". The person can also see a short demonstration on the screen to get a better idea of how to do the test.
13. Once the test is complete, the app will display a score. Inform the person being tested of the result.
    a. If the score is below 50: it is likely that the person has some degree of hearing loss. The lower the score, the greater the hearing loss. The person should be referred for an audiometry test at a suitable health facility.
    b. If the score is between 50 and 75: advise the person to check his/her hearing regularly to know if it reduces further.
    c. If the score is above 75: the person most likely has good hearing. Advise them to take proper care of their ears and protect ears from loud sounds.
14. If the participant is not sure that he/she did the test properly or if you feel that the test needs to be redone, you can do so before you save the results.
15. The results can be exported and saved onto a computer.
16. The test results can also be shared with the participant over WhatsApp or email.
17. You can search the results with the ID you have entered in the history section of the app menu.



hearWHOpro screen with disclaimer



hearWHOpro screen with participant details



hearWHO pro screen with volume adjustment



hearWHOpro screen with digits being entered



hearWHO screen image with 23 sets written

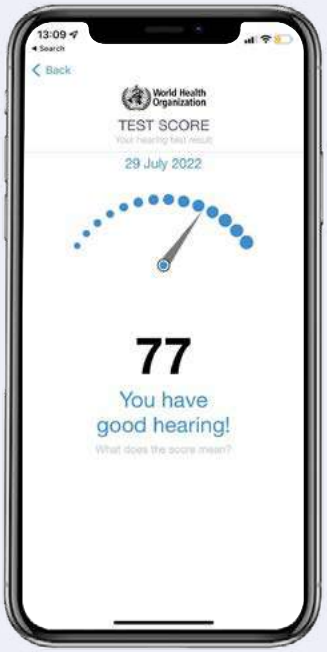


Image of hearWHO screen with score

ACTIVITY 7.1 Checking your own hearing

This activity is to be performed alone and in silence. Using the hearWHOpro app, check your own hearing. After you do so, you can discuss your score with the group and what it can signify.

NOTE

Even in cases where a person passes the whispered voice test or their score is above 50 in hearWHOpro app testing, they should be referred for an audiometry test if they complain of:

- difficulty in hearing in noisy or quiet places;
- regularly experiences tinnitus; or
- has a history of ear disease e.g. ear discharge.

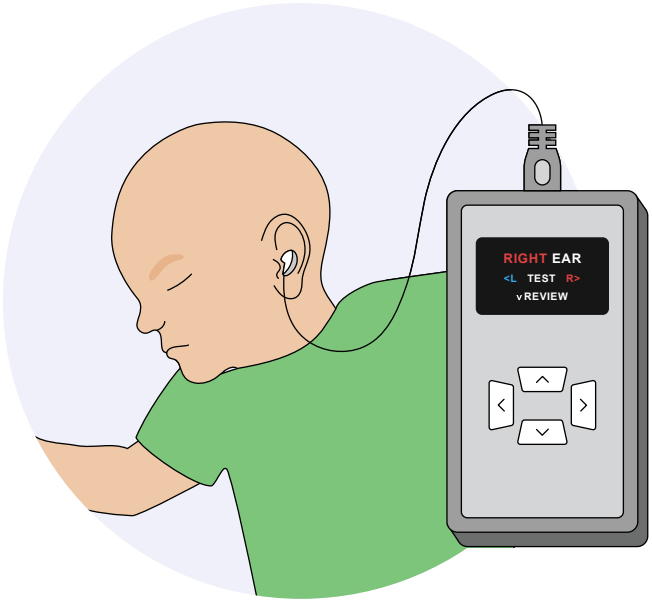
7.5 Diagnosis of hearing loss with specialized equipment

In cases where you suspect hearing loss and **refer** for further testing, the person will have to go to a hospital or clinic where audiology service is available. Depending upon the age of the person or child, the following tests will be performed to diagnose hearing loss if the hospital or clinic has the specialized equipment.

The tests described below require specialized equipment that is unlikely to be available outside of a health facility – the details of the tests are given for your information.

Children aged 0–5 years: A child below 5 years of age cannot be expected to respond reliably to a test, hence hearing in this age group is tested by methods that do not require a response. The common tests that are performed when you refer a baby to a specialist for hearing testing are:

- *Otoacoustic emissions (OAE) test:* this test can be performed on babies and children up to the age of 5 years. The test uses a handheld device and is quick and easy to perform. If the test is failed twice, the child should then be sent for an automated auditory brainstem response test.
- *Automated auditory brainstem response (AABR) test:* this test is usually available only at specialized centres. It is often carried out after sedating the baby.



Otoacoustic emission testing

OAE or AABR tests may be available at a health facility close to you. Find out about the availability of such tests in your area.

Children aged above 5 years: Both children aged older than 5 years and adults can have their hearing checked by a simple test, using pure tone audiometry (PTA). In this test, sounds of different pitches are presented into each ear and the child or person is asked to respond when they can hear these. The result of an audiometry test is called an audiogram (see Figure 7.2a and Figure 7.2b).

An audiogram is a map of a person's hearing showing the hearing threshold (the quietest sound a person can hear) at different frequencies of sound.



Figure 7.2a An audiometer

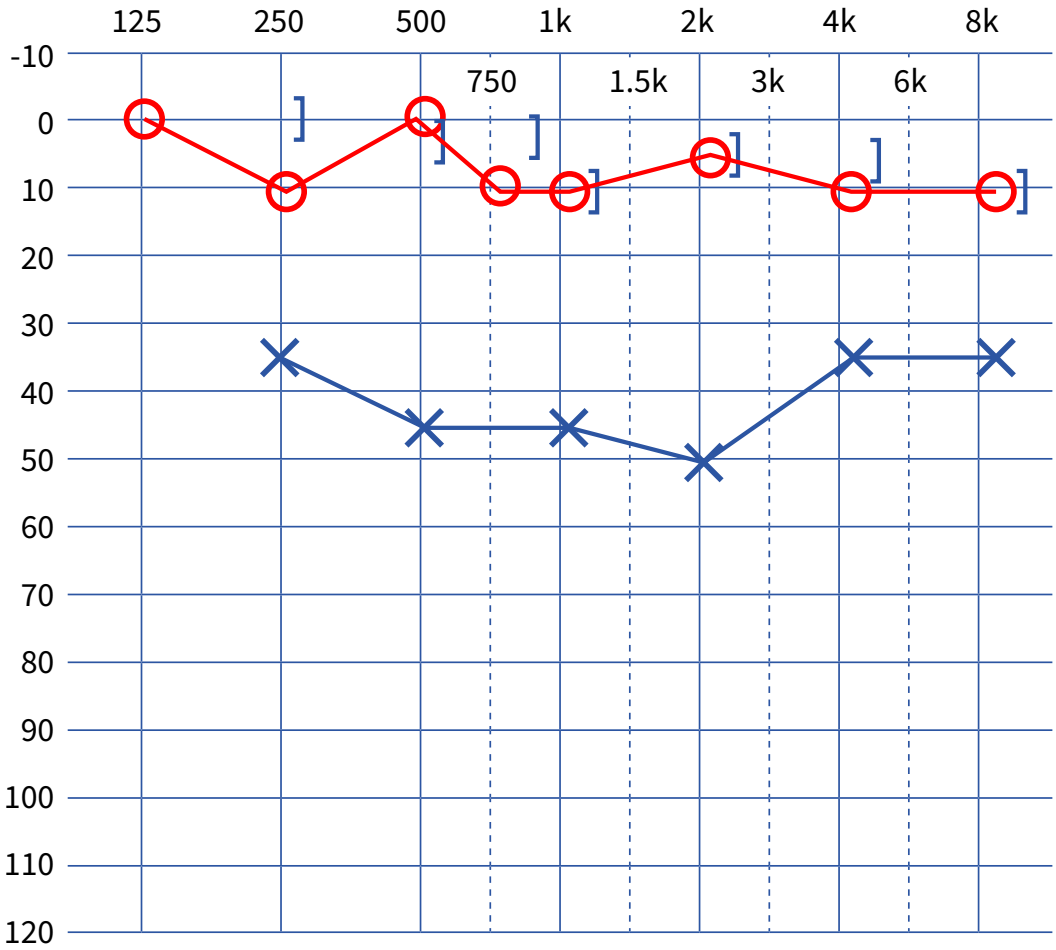


Figure 7.2b An audiogram

An audiogram is a map of a person's hearing showing the hearing threshold (the quietest sound a person can hear) at different frequencies of sound.

Pure tone audiometry can be too difficult for younger children to understand. Instead, they can play a game where they have to perform a specific action when they hear the sound. This is called "play audiometry".

In addition to these methods, hearing in children aged above 5 years can also be tested using certain devices such as Shoebox audiometry or hearTest.



Play audiometry

ACTIVITY 7.2 Role play

Divide into 4 groups. Each group will be allocated an activity. Each activity is to be in the form of role play (in which you have to act out the given scenario).

- Take half an hour to discuss and prepare the role play. Ask your trainer for clarifications, if needed.
- After half an hour, present your role play to the entire group. Involve as many people in the group as possible to act as "child", "mother", "father", "doctor", "attendant" etc.
- Each group's role play must last no more than 10 minutes.
- After each presentation, ask all groups for feedback and discuss the good points and problems with the role play.
- Four situations for role play:

1. A very small child (age 1 year) has been brought to you. Ask relevant questions to assess the hearing and also test the hearing of the "child" with distraction testing.
2. A child of 5 years has been brought to you. Ask relevant questions to assess the hearing and also test the hearing of the "child" by voice tests.
3. A child of 10 years has been brought to you. Ask relevant questions to assess the hearing and also test the hearing of the "child" using the Whispered voice test.
4. A woman aged 60 years has come to you. Ask relevant questions to assess the hearing and also test her hearing using the hearWHO app.

POST-TEST

Module 7: Identifying hearing loss in children and adults

Questions	True	False	Don't know
By one year of age a child can usually speak two words like "give water"			
If parents tell you that their child is not developing speech as expected, you should reassure them that this is normal since some children may be "slow developers"			
Every baby should have a hearing test			
To check the hearing in a small child (e.g. 4 years old) you can instruct them to perform simple actions like touching their nose			
hearWHO is a WHO app to check hearing			
People with normal hearing can hear you when you whisper			
Older adults with hearing loss are likely to speak very softly			
Ringing in the ear is known as "tinnitus"			
Audiogram is a map of the ear			
Even without specialized equipment you can check for hearing loss at all ages			
Score			

Module 8

REHABILITATION OF HEARING LOSS

Module 8

REHABILITATION OF HEARING LOSS

PRE-TEST

Module 8: Rehabilitation of hearing loss

Questions	True	False	Don't know
In babies we should wait till they are one-year old for starting hearing rehabilitation			
A cochlear implant picks up sounds, amplifies them and delivers them into the ear			
It does not matter if water gets into the hearing aid			
Hearing aid should be stored in a sealed container at night			
Children should be encouraged to wear their hearing aids as long as they are awake			
Tubing of the hearing aid can be cleaned by washing it			
Cochlear implant is implanted surgically inside the ear and there is no external visible part			
There is only one sign language that is used across the world			
Anyone can learn sign language			
Patients must be taught how to care for their hearing aid			
Score			

LEARNING OBJECTIVES

By the end of this module the trainee should be able to:

- Explain why early identification and intervention for hearing loss is important.
- List the ways and means for rehabilitation of persons with hearing loss.
- Instruct people about how to care for hearing aids.
- Understand why the use of sign language can benefit all people with hearing loss.
- Inform others about the importance of loops and FM systems in schools.
- Suggest means for communication access to people with hearing loss, e.g. alarm signallers, captioning etc.

WHAT YOU WILL REQUIRE

- Hearing aid with battery
- Model of cochlear implant (if possible)
- Persons using hearing aids, cochlear implants, parent of deaf child, sign language user
- **Community resource 4:** Tips for hearing aid users (printed copies)

TERMINOLOGY

- Alarm signallers
- Assistive technologies
- Auditory training
- Caption services
- Cochlear implants
- Early intervention
- Electrical signals
- External processor
- Hearing aid
- Hearing loss rehabilitation
- Loop systems/FM systems
- Microphone
- Sign language
- Speech/language therapy
- Transmitter



DISCUSSION POINT 8.1

Have you seen anyone using a hearing aid? Or a cochlear implant? Have you met anyone who uses sign language?

Discuss with the group and your trainer.

Rehabilitation commonly refers to solutions which are offered to people when hearing loss cannot be reversed with use of medicines or surgery. Hearing rehabilitation can, in many cases, minimize the negative impact of hearing loss.

8.1 Early intervention

To be successful, rehabilitation should be started as soon as hearing loss is diagnosed. Babies whose hearing loss is diagnosed within 3 months after birth, and interventions initiated within 6 months of age, can develop language at a rate similar to babies with normal hearing.

For both adults and children, it is important that hearing loss is identified as early as possible, and that rehabilitation and the use of devices starts without delay to minimize the difficulties experienced when communicating with others.

Hearing rehabilitation includes the use of hearing aids, cochlear implants, sign language, and rehabilitative therapy. These methods are explored in more detail in the following sections.

8.2 Use of hearing aids

A hearing aid is a device that makes sound louder (Figure 8.1). A hearing aid can be used by people of all ages and with different types or causes of hearing loss. Mostly, people with hearing loss who cannot be treated by medicine or surgery may benefit from hearing aid use.



Figure 8.1 Example of a hearing aid

A hearing aid works by:

- Detecting sounds, using a microphone
- Amplifying those sounds (making them louder)
- Sending the louder sounds down the ear canal through a speaker.

The use of a hearing aid enables a person to hear the quieter sounds that they were unable to hear with their normal hearing. Good quality hearing aids are programmed individually to the person's hearing. This way the hearing aid matches exactly the person needs. Many hearing aids need to be fitted and programmed by an audiologist, or someone with training in hearing aid fitting. Some hearing aids may even be available for purchase and use without fitting.

> A hearing aid makes sounds louder and can help a person with hearing loss hear better

Hearing aids should be worn the entire time that the person is awake. This is especially important for children because they learn by listening to everything happening around them.

Hearing aids use batteries, and these usually need replacing every few days. It is important to learn about hearing aids and how to manage the basic problems people may have when using them.

NOTE

Hearing aids should NOT be used by people who have an ear infection or a discharging ear. Wearing a hearing aid can sometimes make infections worse. **Refer** the person to a doctor. If needed, the doctor may refer the patient to a specialist (e.g. audiologist).

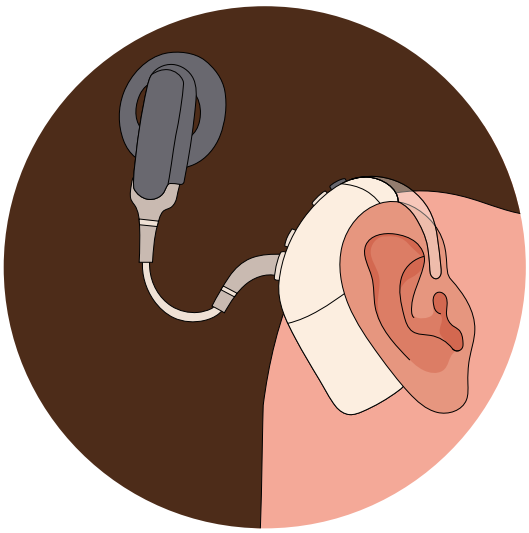
Now look at the **Community resource 4** with instructions on how to care for hearing aids. Learn the instructions so you can explain them to hearing aid users. The sheet can be printed and given to people who use hearing aids.

8.3 Cochlear implants

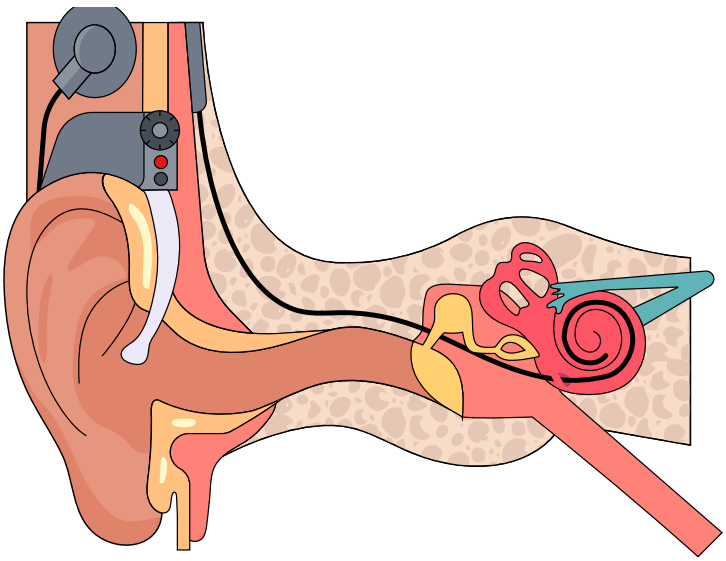
A cochlear implant is an electronic medical device (Figure 8.2) for people with severe or profound hearing loss, and who are unable to benefit from hearing aids. Unlike hearing aids, a cochlear implant converts sounds into electric signals. These signals stimulate the hairs in the inner ear and signals are sent via the hearing nerve to the brain. The brain recognizes these sounds or speech, and this helps the person to hear.

Cochlear implants need to be surgically implanted in the ear. A cochlear implant is made up of the following parts:

- A microphone to pick up sound.
- An external processor that sits behind the ear or on the head and may look similar to a hearing aid. This changes sound into electrical signals.
- A transmitter that sends electrical signals from the external processor to the internal implant.
- An internal part which is placed under the skin behind the ear during an operation. It sends electrical signals into the cochlea to activate the hearing nerve.



Coclear implant: external part



Cochlear implant: internal part

Figure 8.2 Parts of a cochlear implant

ACTIVITY 8.1 Role play

- Trainees should form pairs for this activity, with one person taking the role of "health worker" and the other as "user" of a hearing aid.
- The person acting as "health worker" should then explain to the "user" of the hearing aid how to care for their hearing aid.
- The person in the role of "user" should ask questions about hearing aids which should be answered by the "health worker".
- The roles should then be reversed.

8.4 Sign languages

Children and adults who are deaf (i.e. have severe or profound hearing loss) can benefit from the use of sign language. Sign languages are an important alternative to spoken languages. Sign languages are similar to spoken languages. They are complex, and can communicate different ideas, thoughts, and feelings through the movement and positioning of the hands, arms and mouth.

There are over 250 different sign languages used around the world today (Figure 8.3).

Learning sign language is especially important in situations where hearing devices are not preferred, are not beneficial, or are unavailable. Sign language enables a deaf person to communicate and benefit from education. It can be learned from people who are trained in teaching it and familiar with using it.

Families/carers and teachers can learn to use sign language so that they can communicate well with the deaf person or family member.



Figure 8.3 Examples of words in sign language

Sign language uses movements and positioning of the hands, arms and mouth to communicate.

8.5 Therapy and training

Children with hearing loss commonly need:

- Speech and language therapy to help them to learn spoken language.
- Auditory training to learn how to listen using hearing aids or implants, so they can benefit the most when communicating.



NOTE

Many adults with hearing loss can benefit from auditory training alone, or in addition to use of a hearing aid.

8.6 Other assistive technologies

The use of technology can support people with hearing loss to communicate better. Examples of assistive technologies are:

- Loop systems or FM systems (used especially in school settings, meeting rooms, theatres etc.)
- Alarm signallers
- Captioning services.

ACTIVITY 8.2 Role play

- The group will divide into four (or more) smaller groups. Each of these groups will undertake a role play activity.
- The groups can take half an hour to discuss and prepare the role play.
- After half an hour, each of the groups will present their role play. All group members should be involved. Individual members can take the role of “child”, “mother”, “father”, “doctor”, “attendant” etc.
- Each group’s role play should last no more than 10 minutes.
- After each presentation, discuss the role play with the entire group of trainees.
- Ideas for role play:

1. A child aged 1 year has been diagnosed as deaf. Counsel the parents regarding the need and possible methods of rehabilitation of this child.
2. A child who is hard of hearing has started going to school. Advise parents on what the school can do to ensure the child can hear and learn.
3. An older adult is reluctant to use hearing aids. Explain to him why it is important to do so.
4. A parent of a deaf child wants to know about sign language and how it can help their child. Explain to the parent what sign language is, how they can learn it and how they can support the child.

POST-TEST

Module 8: Rehabilitation of hearing loss

Questions	True	False	Don't know
In babies we should wait till they are one-year old for starting hearing rehabilitation			
A cochlear implant picks up sounds, amplifies them and delivers them into the ear			
It does not matter if water gets into the hearing aid			
Hearing aid should be stored in a sealed container at night			
Children should be encouraged to wear their hearing aids as long as they are awake			
Tubing of the hearing aid can be cleaned by washing it			
Cochlear implant is implanted surgically inside the ear and there is no external visible part			
There is only one sign language that is used across the world			
Anyone can learn sign language			
Patients must be taught how to care for their hearing aid			
Score			

Module 9

THE ROLE OF HEALTH WORKERS AND DOCTORS IN EAR AND HEARING CARE

Module 9

THE ROLE OF HEALTH WORKERS AND DOCTORS IN EAR AND HEARING CARE

PRE-TEST

Module 9: Role of health workers and doctors in ear and hearing care

Questions	True	False	Don't know
Only specialists can identify and treat common ear diseases			
Ears should be regularly cleaned with cotton buds/q-tips			
Hearing loss caused by loud sounds is permanent			
Home remedies can help cure ear and hearing problems			
Using earplugs in noisy places can protect one's hearing			
When speaking with a hard of hearing person, make sure to stand facing the person and with proper light on the face			
Adults can use the WHO hearWHO app to check and track their hearing			
Parents don't need to tell teachers about their child's hearing loss. By doing so, the child may face stigma at school			
Shouting at people who have hearing loss helps them to hear			
World Hearing Day is observed on 3 March each year			
Score			

LEARNING OBJECTIVES

By the end of this module the trainee should:

- Know what role they can play in the prevention, early identification, and management of hearing loss and ear diseases.
- Be able to counsel people regarding the "Dos" and "Don'ts" of ear and hearing care.
- Understand simple steps that can protect ears against loud sounds including music.

WHAT YOU WILL REQUIRE

Community resource 5: Tips for healthy ears (printed copies)

Community resource 6:
Tips for safe listening (printed copies)

TERMINOLOGY

- Ear care
- Ear protection
- Early identification
- Safe listening
- Hearing loss prevention
- Rehabilitation



DISCUSSION POINT 9.1

What role do you think you can play in addressing the needs of people with ear diseases or hearing loss, and those at risk of these conditions?

Discuss with the group and your trainer.

9.1 Health workers and doctors working at primary level

Health workers and doctors can play an important role in the prevention, treatment and rehabilitation of ear diseases and hearing loss. The exact nature of responsibilities is determined by the national or local authorities.

Responsibilities of health workers include:

- Identifying and treating common ear diseases.
- Providing guidance to people who have ear diseases, and, where needed, referral.
- Identifying children and adults with hearing loss at the earliest stage and guiding them for testing and rehabilitation.
- Teaching people how to take care of their ears; care for discharging ears; take care of hearing aids; communicate with those who have hearing loss.
- Educating the community and raising awareness about hearing loss.
- Supporting people with hearing loss to integrate in society.

Responsibilities of doctors include:

- Identifying and treating common ear diseases.
- Providing guidance for people who need specialized care for ear diseases.
- Identifying children and adults with hearing loss at the earliest stage and guiding them for proper testing and rehabilitation.
- Teaching people how to take care of their ears; care for discharging ears; take care of hearing aids; communicate with those who have hearing loss.
- Backstopping health workers who provide ear and hearing care.
- Educating the community and raising awareness about hearing loss.
- Supporting people with hearing loss to integrate in society.

9.2 Raising awareness and educating communities

Many cases of hearing loss can be prevented. Health workers and doctors have a responsibility to raise awareness and educate communities about the prevalence of hearing loss. They can encourage community members to take the following steps for prevention:

- Ensure that they are vaccinated against rubella, measles, mumps, and meningitis.
- Ensure that mothers and babies receive good care before, during and after the birth.
- Protect their ears from loud sounds at work and in the environment.
- Practice safe listening to protect the ears when listening to loud music.
- Know that some medicines can affect hearing. People should ask their doctor if the medicines they are prescribed can affect their hearing and, if so, how this can be avoided.
- Take good care of their ears by practicing the “Dos” and “Don’ts” listed.
- Observe World Hearing Day on 3 March and use this as an opportunity to raise awareness of ear and hearing care in their community.

DO



Use earplugs in noisy places



Check your hearing regularly



Wear your hearing aids regularly, when advised



See a doctor if you have ear or hearing problems

DON'T



Put cotton buds, oil, sticks or pins inside your ears



Swim or wash in dirty water



Share earphones or earplugs



Listen to loud sounds or loud music

9.3 Facilitating early intervention

Early identification is crucial for addressing hearing loss. Health workers and doctors can facilitate this by:

- being alert to signs of suspected hearing loss;
- checking a person's hearing (without equipment if unavailable);
- stressing the importance of early identification and rehabilitation.

Health workers and doctors **MUST** guide people to have their hearing tested and, if hearing loss is indicated, to start rehabilitation **without delay.**

Refer to:

- **Community resource 5**: Tips for healthy ears
- **Community resource 6**: Tips for safe listening

9.4 Supporting people with hearing loss

Health workers and doctors can do a lot to support people with hearing loss by following and promoting simple practices.

How to speak with someone who is hard of hearing:

- Speak clearly and slowly. Don't shout!
- Stand in a space that is well lit and face the person so that they can see your face when you speak.
- Do not exaggerate or distort lip movements as this may make it harder for the person to follow what is being said.
- Try to keep background noise to a minimum, especially at school and at work. Loud background noise can make it difficult for someone with hearing loss to hear, even with a hearing aid.
- If there is person with hearing loss in a group (social, family or work) ensure that people talk one at a time. This enables the person who is hard of hearing to be included in conversations.
- If using a protective COVID-19 face mask, try to use transparent masks of good quality, if available. This will allow the person who is hard of hearing to lip-read. If good quality transparent masks are not available, medical masks rather than cloth masks are preferred.

How to support someone with a hearing loss or deafness:

- Encourage the person to get a hearing test, if they have not already had one.
- Guide them in the use of hearing devices, if available.
- Encourage the use of sign language, if needed. (hearWHO can help people check and keep track of their hearing status.)
- Guide others to position themselves suitably during a conversation with a person who is hard of hearing or deaf, ensuring that their faces are well-lit and that they are fully facing the individual with hearing loss.



How to support someone who is hard of hearing

How to support children with hearing loss or deafness:

Children have unique struggles when dealing with hearing loss. Supporting them will require:

- Helping the child learn to self-advocate for their needs at home and at school, for example by encouraging the child to inform the teacher or parent when the hearing aid stops working, or when repetition of speech is needed.
- Encouraging the parents to inform the child's teacher of the child's hearing loss so that the teacher can take steps to communicate well with the child.
- Guiding teachers on how best to communicate with the child; for example, to seat the child in the front row of the class; to face the child when speaking; to speak slowly and clearly; to repeat when needed; to encourage the child to indicate when repetition is needed.
- Informing parents and teachers about sign language and encouraging them to learn this as a mean of communication.

NOTE

Remember that with proper care and support, people with hearing loss can do everything a hearing person can do, except to hear normally. They must be included in all activities.



How to support children with hearing loss or deafness:

ACTIVITY 9.1 Discussion

In groups of 4 or 5, trainees should discuss what they plan to do to improve ear and hearing care within their community. First discuss within each individual group and then among the entire group.

POST-TEST

Module 9: Role of health workers and doctors in ear and hearing care

Questions	True	False	Don't know
Only specialists can identify and treat common ear diseases			
Ears should be regularly cleaned with cotton buds/q-tips			
Hearing loss caused by loud sounds is permanent			
Home remedies can help cure ear and hearing problems			
Using earplugs in noisy places can protect one's hearing			
When speaking with a hard of hearing person, make sure to stand facing the person and with proper light on the face			
Adults can use the WHO hearWHO app to check and track their hearing			
Parents don't need to tell teachers about their child's hearing loss. By doing so, the child may face stigma at school			
Shouting at people who have hearing loss helps them to hear			
World Hearing Day is observed on 3 March each year			
Score			

Module 10

WHAT DOES THE WORLD HEALTH ORGANIZATION DO?



An awareness-raising photo contest picture for World Hearing Day 2019



An event in Honduras on World Hearing Day 2020

In many parts of the world, services to identify and manage people with ear disease and hearing loss are few, or do not exist at all.

The World Health Organization (WHO) works with governments and partners to advocate for the development of ear and hearing care services in countries across the world and provides technical assistance to make this possible. The key initiatives led by the World Health Organization in the field of ear and hearing care include:

- **H.E.A.R.I.N.G. care for all:** in collaboration with governments, national experts, and civil society, WHO works to integrate people-centred ear and hearing care into national health plans. This training manual forms a part of this effort.
- **World Hearing Day (3 March):** is an annual advocacy event led by WHO to raise awareness on hearing loss globally.
- **Make Listening Safe:** is a global initiative to reduce the occurrence of hearing loss due to exposure to loud sounds and noise in recreational settings.
- **World Hearing Forum:** is a WHO-hosted global alliance advocating for integration of ear and hearing care into national health plans.
- **AUDIRe:** a global initiative to improve access to hearing aids and hearing services especially in low- and middle-income countries.



DISCUSSION POINT 10.1

- Do you know why 3 March is dedicated as the World Hearing Day? Can you guess?

Discuss with the group and your trainer.

You can support the efforts of WHO by:

1. Participating in World Hearing Day. This is an annual advocacy event organized by WHO. It is held on 3 March each year.
2. Advocating to “Make Listening Safe”.
3. Using available WHO awareness and advocacy materials.
4. Joining in and promoting the activities of the World Hearing Forum.

To learn more, visit the WHO webpage: https://www.who.int/health-topics/hearing-loss#tab=tab_1



EAR AND HEARING CARE FOR ALL!

Let’s make it a reality

Annex 1

GRADES OF HEARING LOSS

Annex 1

GRADES OF HEARING LOSS

Hearing loss is classified according to severity

Grade	Hearing threshold* in better hearing ear in decibels (dB)	Hearing experience in a quiet environment for most adults	Hearing experience in a noisy environment for most adults
Normal hearing	Less than 20 dB	No problem hearing sounds	No or minimal problem hearing sounds
Mild hearing loss	20 to < 35 dB	Does not have problems hearing conversational speech	May have difficulty hearing conversational speech
Moderate hearing loss	35 to < 50 dB	May have difficulty hearing conversational speech	Difficulty hearing and taking part in conversation
Moderately severe hearing loss	50 to < 65 dB	Difficulty hearing conversational speech; can hear raised voices without difficulty	Difficulty hearing most speech and taking part in conversation
Severe hearing loss	65 to < 80 dB	Does not hear most conversational speech; may have difficulty hearing and understanding raised voices	Extreme difficulty hearing speech and taking part in conversation
Profound hearing loss	80 to < 95 dB	Extreme difficulty hearing raised voices	Conversational speech cannot be heard
Complete or total hearing loss/deafness	95 dB or greater	Cannot hear speech and most environmental sounds	Cannot hear speech and most environmental sounds
Unilateral	< 20 dB in the better ear, 35 dB or greater in the worse ear	May not have problem unless sound is near the poorer hearing ear. May have difficulty in locating sounds	May have difficulty hearing speech and taking part in conversation, and in locating sounds

* Hearing threshold refers to the minimum sound intensity that an ear can detect as an average of values at 500, 1000, 2000, 4000 Hz in the better ear

NOTE

The above classification and grades are for epidemiological use and applicable to adults. The following points must be kept in mind while applying this classification:

- While audiometric descriptors (e.g. category, pure-tone average) provide a useful summary of an individual's hearing thresholds, they should not be used as the sole determinant in the assessment of disability or the provision of intervention(s), including hearing aids or cochlear implants.
- The ability to detect pure tones using earphones in a quiet environment is not, in itself, a reliable indicator of hearing disability. Audiometric descriptors alone should not be used as the measure of difficulty experienced with communication when there is background noise, the primary complaint of individuals with hearing loss.
- Unilateral hearing loss can pose a significant challenge for an individual at any level of asymmetry. It therefore requires suitable attention and intervention based on the difficulty experienced by the person.

NOTE

The different modules of this manual provide you with information and resources that can help you identify these problems at the earliest stages among members of your community. It also gives information on how some common ear problems can be treated and when you need to refer people for expert advice.

Annex 2

PATIENT RECORD

Annex 2

PATIENT RECORD

Patient history and Examination record	
Patient name:	
Assessed by:	
Sex: M/F	
Age:	
Date:	
Job:	
Location:	

History	
Ear affected: right/left/both	
Hearing loss:	
Ear discharge:	
Ear pain:	
Any other (explain)	
Any other (explain)	
Any other (explain)	

Pinna	
Left ear	**Right ear**
Normal/abnormal	Normal/abnormal
Infection of the pins	Infection of the pins
Skin infection	Skin infection
Infection of the pinna	Infection of the pinna
Pre-auricular sinus	Pre-auricular sinus
Injury to pinna	Injury to pinna
Deformity of the pinna	Deformity of the pinna
Some other problem Explain:	Some other problem Explain:

Ear canal	
Left ear	**Right ear**
Normal/abnormal	Normal/abnormal
Wax	Wax
Foreign body	Foreign body
Otitis externa	Otitis externa
Fungal infection	Fungal infection
Some other problem Explain:	Some other problem Explain:

Ear drum	
Left ear	**Right ear**
Normal/abnormal	Normal/abnormal
Infection/bulging	Infection/bulging
Perforation	Perforation
Dull/sucked in	Dull/sucked in
Pre-auricular sinus	Pre-auricular sinus
Cholesteatoma	Cholesteatoma
Some other problem Explain:	Some other problem Explain:

Mastoid	
Left ear	**Right ear**
Normal/redness/swelling	Normal/redness/swelling

Facial nerve	
Left ear	**Right ear**
Normal/weakness	Normal/weakness

Hearing test in children (without equipment)
Risk factor for hearing loss: Yes/No
Milestones for hearing and speech: On time/delayed

Parent suspicion of hearing loss: Yes/No
Hearing assessment through distraction test/voice test/whispered voice test
Left ear: Pass/Refer
Right ear: Pass/Refer

Hearing test in adults (whispered voice test or hearWHOpro)
Whispered voice test
Left ear: Pass/Refer
Right ear: Pass/Refer
hearWHOpro
Score above 50
Score below 50

Portable diagnosis
Treatment
Review:
Date and time:
Place:
Referral
To general practitioner or family doctor/ENT doctor/audiologist/others
Name of doctor if available:
Name of health facility, if available:

Annex 3

DIAGNOSIS AND MANAGEMENT OF EAR AND HEARING PROBLEMS

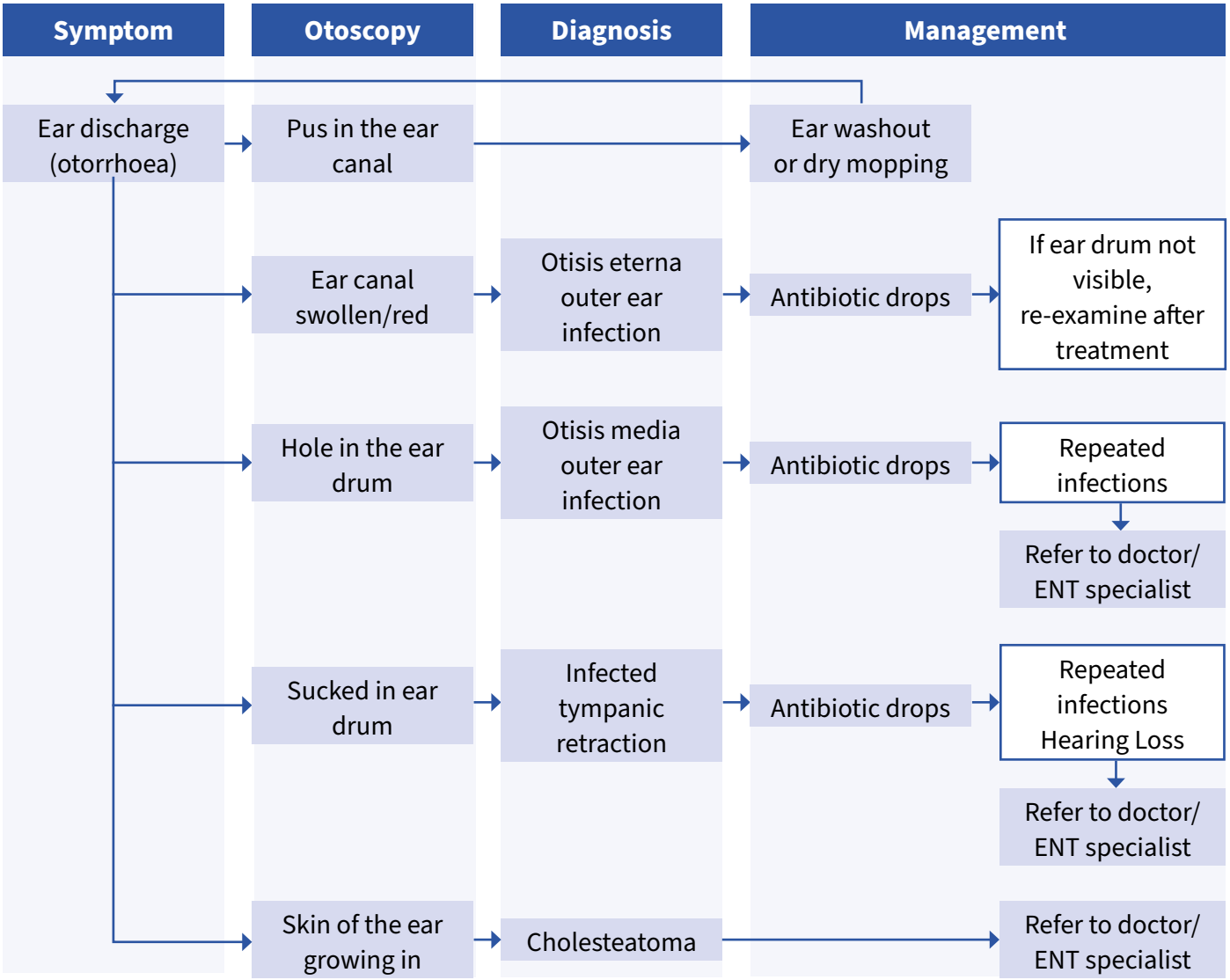
Annex 3

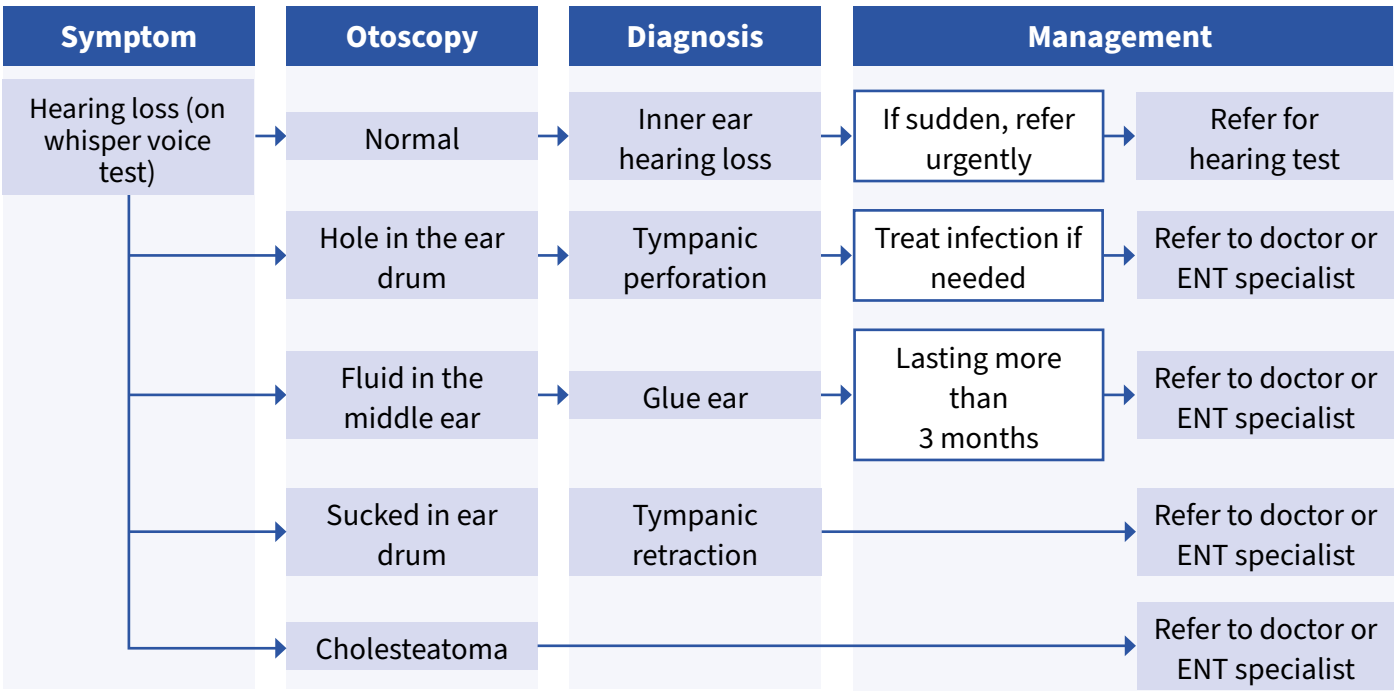
DIAGNOSIS AND MANAGEMENT OF EAR AND HEARING PROBLEMS

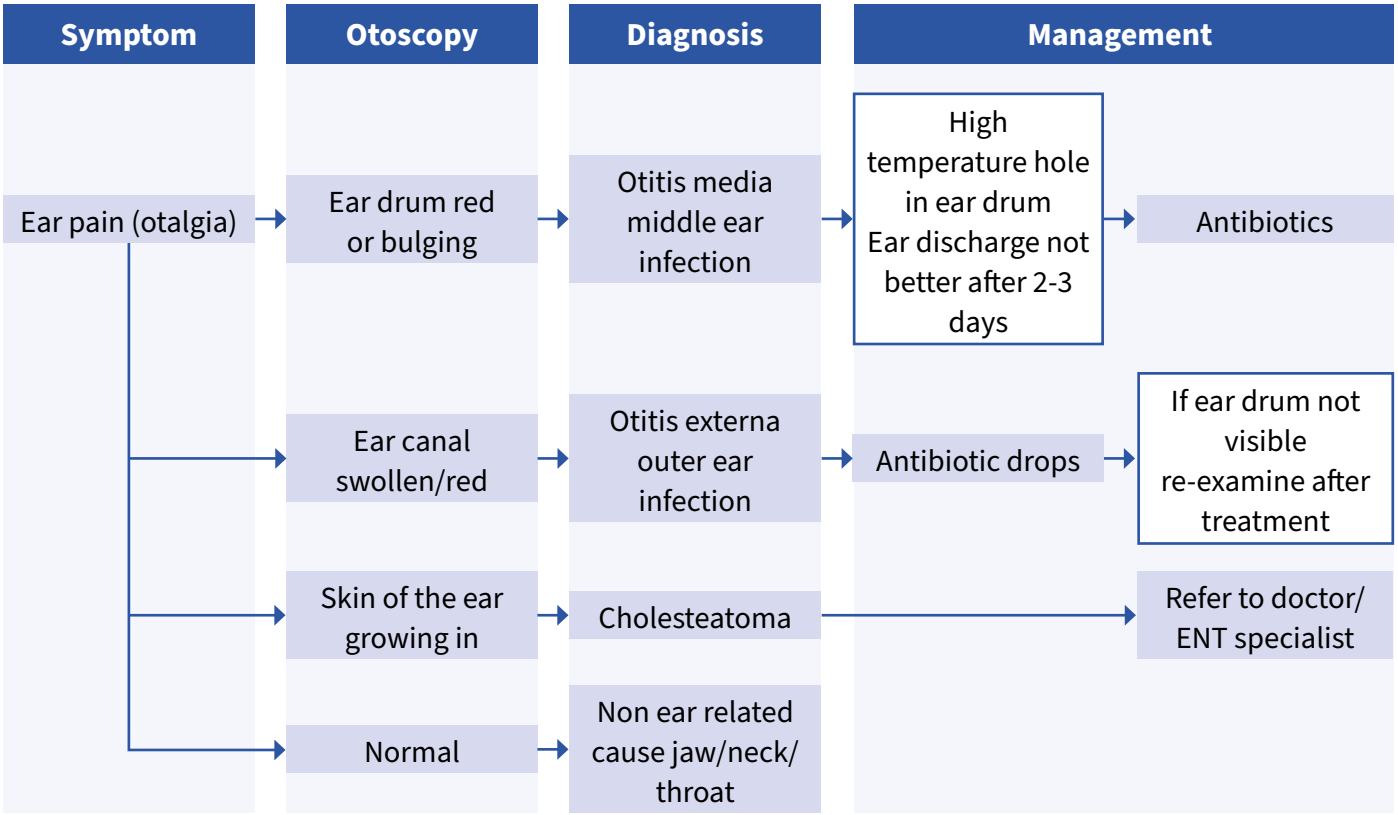
For ear and hearing problems, diagnosis is made by taking a history of the person's symptoms, performing otoscopy to look at the ear canal and tympanic membrane and, where required, performing a hearing test.

The following diagrams should help you to diagnose and manage most ear and hearing problems. Use the chart that best fits the main symptom: ear discharge, hearing loss, or ear pain.

The symptoms of tinnitus and dizziness (or vertigo) can suggest a problem with the ear, usually the inner ear. If tinnitus or dizziness are the main symptom, and they have continued for more than a few weeks, the person should be referred to a specialist.




Symptom
Otoscopy
Diagnosis
Management
Hearing loss (on whisper voice test)
Normal
Inner ear hearing loss
If sudden, refer urgently
Refer for hearing test
Hole in the ear drum
Tympanic perforation
Treat infection if needed
Refer to doctor or ENT specialist
Fluid in the middle ear
Glue ear
Lasting more than 3 months
Refer to doctor or ENT specialist
Sucked in ear drum
Tympanic retraction
Refer to doctor or ENT specialist
Cholesteatoma
Refer to doctor or ENT specialist


Symptom
Otoscopy
Diagnosis
Management
Ear pain (otalgia)
Ear drum red or bulging
Otitis media middle ear infection
High temperature hole in ear drum Ear discharge not better after 2-3 days
Antibiotics
Ear canal swollen/red
Otitis externa outer ear infection
Antibiotic drops
If ear drum not visible re-examine after treatment
Skin of the ear growing in
Cholesteatoma
Refer to doctor/ ENT specialist
Normal
Non ear related cause jaw/neck/ throat


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